THE BUILDER

INCORPORATING

"ARCHITECTURE" and "THE BRITISH ARCHITECT"

VOL. CLXXX FEBRUARY 9, 1951 No. 5634

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THIS WEEK'S NEWS

TO HELP in the stimulation of interest in the building industry as a career among boys at public schools, the L.M.B.A. has become a subscribing member of the Public Schools Appointments Bureau. p. 193

THE DESIGNATION ORDER for the Lake District National Park has been signed by Sir Patrick Duff, chairman of the National Parks Commission. With an area of 554,000 acres, the Lake District is likely to be one of the largest of the National parks. Snowdon area is also designated. p. 195

WE ILLUSTRATE the design placed first in the competition for the extension of the University of Edinburgh Medical School. p. 197

SPEAKING of the training conditions at the time when he joined the profession, Mr. Graham Henderson, president of the R.I.B.A., in an address to students on February 6, said, "At the time I am speaking of, competitions, to some of us, were the equivalent of a course in design, with the added attraction of possible substantial professional success. If the carrot tended to elude the donkey it at least encouraged it on its journey." p. 208

WESTMINSTER CITY COUNCIL, at its meeting last week, decided to ask the Government to submit the whole scheme for the rebuilding of Carlton House-terrace, including the proposed ramp in Waterloo-place, to the Royal Fine Art Commission, and to publish the Commission's observations before finally approving any designs. p. 211

THE TOTAL NUMBER of houses completed under the post-war programme is now 978,664 of which 198,171 were completed in 1950. p. 212

"THE GOVERNMENT are now giving close consideration to the matter of the Westminster Hospital site," said Lord Morrison, speaking in the House of Lords on January 31. He added: "I cannot give any hope at all that they will look favourably on the idea of abandoning the site altogether." p. 213

RESEARCH: ARE WE ON THE RIGHT LINES?

THE report of the Building Research Board for 1949, published last month, gives rise to mixed feelings. It is in many ways an encouraging document, but, as we shall endeavour to show, it hardly seems satisfactory having regard to the urgent need to increase production by every available means.

The Board's report, together with the report of the Director of Building Research, is a substantial document of some sixty pages. It is only possible here to refer to some of the more important developments in 1949. Of these perhaps the most significant is the increasing use of field work and full-scale tests. Items of this kind on which the Building Research Station is now engaged include soil mechanics, stresses in building structures and bridges, and the heating, ventilation and sound insulation of houses. This is a sphere of activity in which we are far behind the Americans—inevitably so perhaps, because we have not in this country the space and the resources to indulge in the large-scale experiments which are often undertaken in the U.S.A. Much (though by no means all) of the B.R.S. work in this direction is limited to investigations carried out on current building projects; for instance, the building of a bridge in London and of the new Government offices in Whitehall Gardens gave an opportunity to carry out certain tests on foundations. The work on heating, ventilating and sound insulation at Abbots Langley, where a number of houses have been built and are occupied by families, is a happy synthesis of pure experiment and a useful building project. It is to be hoped that the B.R.S. will be given every encouragement to carry out such full-scale investigations, for theoretical calculations and tests on models can never be completely reliable.

Special interest attaches to the opening in 1949 of a branch laboratory for Scotland. The purpose of this new laboratory is to study the particular problems and techniques of the north and to make closer the many contacts which already exist between the B.R.S. and the Scottish building industry. "It will," says the Board, "be able to carry out investigations on materials used in the north and help in the development of indigenous resources for their manufacture." In view of what we say below about the importance of increasing the supply of materials to the industry, this statement by the Board is most welcome.

Another important development is the expansion of the Station's staff. During 1949 the number of vacancies was reduced from sixty to forty. The full benefit of the improved recruitment must, of course, be looked for in the future, because new staff cannot be expected to make a full contribution immediately they join the Station. We would certainly echo the Board's hope that the improvement in the staff position will be maintained and that it will soon be possible for the Station to begin work on items now in abeyance.

The difficulties of staff recruitment bring us back to a problem we have discussed a number of times before: are our research facilities being used to the best advantage in present circumstances? This question is not an easy one to answer for a variety of reasons. There can be no doubt that the work of the B.R.S. is a valuable contribution to building science from which building practice will benefit in due course. Were conditions normal the present programme could hardly be bettered. But conditions are not normal. In their report for 1947, the Board recorded the fact that during the year "efforts have been largely concentrated on the more pressing short-range problems at the

expense of the longer-range and more fundamental problems. This has been made necessary by the needs of the present situation, needs that have been emphasised as the year progressed by the deepening economic crisis."

It cannot be said, however, that either the programme for 1947 or that for 1949 represented a crisis programme. Since then the crisis has deepened still further. The rearmament programme may well lead to the depletion of our already limited building resources, and so make the problem of increasing the productivity of the building industry more urgent than ever. At the same time it is likely to become even more difficult than it is at present to recruit research staff. After all, building is only one of many industries in which research activity is increasing and there are needs of the schools and universities to be considered as well, and, on top of all this, the needs of defence will almost certainly lead to the diversion of scientific and technical men to rearmament problems.

In all these circumstances one cannot feel assured that the present B.R.S. programme is sufficiently directed to solving the most urgent needs—namely, how to increase the productivity of the building industry. This would seem to be primarily a question of getting increased supplies of materials, and particularly of materials for traditional building. It is unlikely that present work of the B.R.S. will make any immediate contribution to this problem, though it is only fair to say that the work described in the B.R.S. report for 1949 is only part of the Government's programme of building research. Until recently the B.R.S. was only one of the official agencies engaged in building research. Since then the responsibility for all Government-sponsored building research has been transferred to the Department of Scientific and Industrial Research—that presumably means to the Building Research Board if not to the Station.

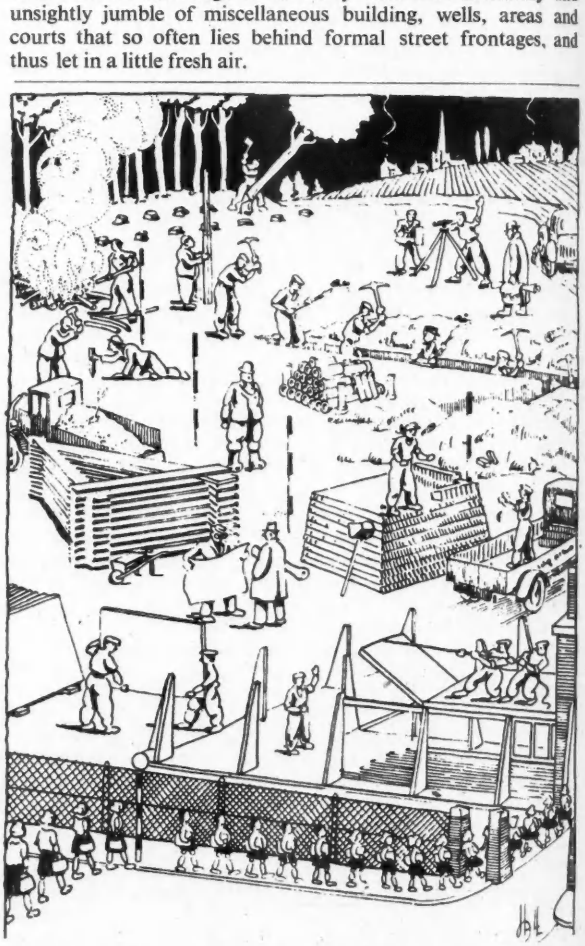
It may be, therefore, that the Board's report for the year just ended present a different picture of Government building research. Until that report is published—and it is to be hoped that the Stationery Office will contrive to publish it much more expeditiously than the previous year's report—final judgment must be suspended. In the meantime, we would urge that the question at the head of this article is an important and urgent one, and that, if the Board have not yet considered their research programmes in this light, they should do so as soon as possible.

DIAGONAL PLANNING

IS the time-honoured convention of building to a line parallel with the road "on the way out?" In some connections it has been "going out" for years; if they had done little else the Garden Cities would have justified themselves by showing how to achieve variety and interest by varying the building line. In urban building, however, little has been done to get variety of layout because it has been impossible to do more. Architects, in the main, have been tied to a general building line, which has often meant relying on that unsatisfactory device the internal light well to get light for the rear parts of their buildings. Occasionally a site has given the opportunity for a free-standing building, and thoughtful pioneer work has been done, as, for example, by Alfred Waterhouse in University College Hospital, Gower-st., and by Dr. Charles Holden, in his London Transport building at St. James's Park—both of which make use of a vertical spine giving access to radiating wings. In the latter case it was found that much more as well as better-lighted accommodation could be obtained on this plan than by the conventional method of conforming with the normal building line and lighting the rear by means of wells.

Opportunities for freer and better planning are now becoming more frequent, particularly in the sphere of urban housing, as a result of the re-development of large sites of bombed or obsolete buildings. The Pimlico housing competition of the Westminster City Council stands out in the post-war era as an example of the diagonal form of layout. Recently we illustrated a further development of the principle, by Messrs. Easton and Robertson, in the Church-street housing scheme, St. Marylebone. Here, as pointed out, the setting of the blocks at an angle to the roadways has several advantages — it brings a sense of distance into the outlook from the windows of the flats, breaks the monotonous rhythm of the neighbourhood, keeps the buildings as far as possible from overlooking the main traffic and, most important of all, provides a maximum of east and west exposure. The setting-back of the frontages also enables shoppers to leave prams, etc., in comparative security away from street traffic, while the layout of the spaces between the buildings becomes more homely and less formal in character than in the more regular type of development. Visually the serrated appearance of the skyline provides a pleasing contrast to the monotonous effect which is often produced by conforming to a normal building line.

How far is this type of planning capable of being adapted to the re-development of commercial areas? The answer depends on several factors, including the size and disposition of the site the willingness of the local authority to abandon the conventional building line, and the readiness of shopkeepers to be some distance away from the main flow of pedestrian traffic, as some would have to be. This might not be a disadvantage, for custom might well be attracted by the elbow room afforded by wide pavement space. Burlington Arcade, for example, does not suffer, but rather benefits, from its remoteness from the traffic, and tumult of Piccadilly. We should like to see the idea tried out on some of the bombed sites in the City, or in one of the main London thoroughfares like Oxford-st. At the very least, it would be an advantage to do away with that unhealthy and unsightly jumble of miscellaneous building, wells, areas and courts that so often lies behind formal street frontages, and thus let in a little fresh air.



This design, which appeared on the menu card at the annual dinner of Essex County Council Architect's Department, provides a subtle comment on the County's Education Committee's alleged habit of pouring children into new schools before the buildings are completed. It was drawn by Mr. A. T. H. Hall

NOTES AND NEWS

Question of School Design

THE drive in school building is to continue this year according to the London County Council, who announce that £4,500,000 is to be spent on new, or extensions to existing buildings in 1951. School design still remains very much a matter of personal ideas and taste; the far-flung type, with many seemingly interminable corridors, is now tending to be regarded with criticism. After all, is there anything particularly wrong with building upwards and saving site space?

The exhibition of schoolwork by local authorities a few years ago at the R.I.B.A. showed that the architectural aspect of school design was rapidly assuming a distinct air of banality. It is good therefore that a revival is rumoured in the close grouping theory—anyway, climbing stairs is good for children's calves!

Public Schools and Building

TO HELP in the stimulation of interest in the building industry as a career among boys at public schools, the London Master Builders' Association has become a subscribing member of the Public Schools Appointments Bureau. It is paying an annual subscription of £25. For several years past, by arranging talks and organising visits to building sites, the L.M.B.A. has been bringing before public schools the considerable openings which now exist in the building industry to young men of education. Notable among them have been the visits of the Harrow boys to a housing site, to the new House of Commons, to the Festival of Britain site, and a similar visit last summer by senior classes from Merchant Taylors' School.

Last year the Public Schools Appointments Bureau was reorganised, and Mr. Hugh Lyon, former Headmaster of Rugby, was appointed director. One of its chief functions is to provide information to schools about kinds of career and to advise and place individual boys. Its work is now being extended in the hope of securing more openings for boys from all types of school who remain at school until about the age of 18 who do not go to a university. The L.M.B.A. has promised to help the Bureau in every way possible, and in particular by giving it full details of the opportunities offered by the building industry, of the means of entry into the industry, and of firms who operate suitable training schemes for prospective entrants.

The George and Vulture Tavern

CONTRARY to recent statements, there has been no final decision taken regarding the George and Vulture tavern in Castle-court, between Cornhill and Lombard-street, one of the oldest chop houses in the City of London. It is owned by Williams Deacon's Bank, Ltd., who may require the site for extension of their London office at Birchin-lane. They appreciate (they inform us) the unhappiness which its destruction would cause to many of Dickens's admirers and other lovers of old inns, and the building may have a long reprieve.

The fame of the George and Vulture rests, to-day, on its Pickwickian associations. Mr. Pickwick lived there for a time (so the Papers inform us) and one may suspect that Dickens himself had a liking for the place, for "Mr. Pickwick and Sam took up their present abode in very good, old fashioned and comfortable quarters: to wit, the George and Vulture Tavern and Hotel, George Yard, Lombard-street."

Soane Medallion Conditions

THE 1951 SOANE MEDALLION COMPETITION is confined to members of the R.I.B.A. and elected students of the R.I.B.A.; and to members of the allied societies overseas who have passed the R.I.B.A. final or equivalent examination or who have produced certificates from members of the R.I.B.A. to the effect that they have reached the required standard.

Intending competitors are also asked to note that, with respect to the R.I.B.A. final or equivalent examination, students need not have passed the professional practice examination to be taken after 12 months' practical experience.

Architect's Scandinavian Visit

SMALL-SCALE PHOTOGRAPHS of drawings and plans of the new towns of Stevenage and Harlow will be used by Mr. F. R. S. Yorke, F.R.I.B.A., to illustrate lectures and discussions on town planning which he will hold with architects and architectural students during a tour of Finland (from February 3 to 10) and Denmark (February 11 to 16), arranged by the British Council

The visit has been arranged at the special request of Professor Alvar Aalto, the leading Finnish architect, who has arranged for Mr. Yorke to see examples of Scandinavian architecture. Mr. Yorke will lecture to the Architects' Association in both countries and also to the Finnish-British Society in Helsinki.

A Question of Balance

MR. ALEXANDER CALDER'S collection of "mobiles" recently at the Lefevre Gallery is both stimulating and diverting. Mr. Calder is a New Yorker, and has been called "America's best artist." It has also been said that his medium of artistic expression is perfectly in tune with his living environment—New York being the synthesis of the machine age and the power of the engineer. Be this as it may, his "mobiles" (or mechanical sculptures) display a telling ingenuity in design and construction. Many are lightsome looking affairs, so finely conceived that a breath of air will start them into motion. Mobile design is in the end the study of the design in balance and form in relation to movement, but its place as a decorative effect has yet to be found, for all decorative effect must in some way contribute towards the whole. "Mobiles," however, are strictly impersonal, being almost within nature itself from the viewpoint of form and movement.

The Lefevre Gallery was, at the showing, full of a subdued tinkling, the "music of the mobiles," and our minds went back to those intriguing yet slightly eerie cut glass effects of yesteryear that tinkled at the slightest breeze from the rarely opened windows of Victorian mansions.

Centenary of J. M. W. Turner

TO MARK the centenary of the death of J. M. W. Turner, R.A., Thos. Agnew and Sons, Ltd., 43, Old Bond Street, W.1, have organised a loan exhibition of some 120 of his finest water colours. All the water colours exhibited come from private collections and the exhibition has been made possible by the generosity of 55 owners of Turner water colours. The entire proceeds of the exhibition (with no deduction for expenses) will be given to the Artists' General Benevolent Institution, of which Turner was treasurer or chairman from 1815-1830 and a trustee from 1830-1842. The exhibition opened for four weeks on February 7.

W. N. W. RAMSAY, A.R.I.B.A., whose winning design in the competition for extensions to Edinburgh Medical School is illustrated on pages 197-9

V. and A. Evening Lectures

THE PROGRAMME of free evening lectures for the 1950-51 season to be given at the Victoria and Albert Museum has been published. It includes lectures on "Elizabethan Art," "The Great Exhibition of 1851" and "Some Aspects of Italian Sculpture." The lectures, which will be illustrated with lantern slides, are being given by members of the museum staff on Wednesday evenings at 6.15 p.m. in the lecture theatre of the museum from January 31 to April 25.

The museum has now opened a new resturant, self-service café and tea room which is situated close to the Gothic Tapestry Court (Room 38) and can be reached via the main entrance in Cromwell-road, or the Exhibition-road entrance.

Mayor of Westminster's Appeal

COUNCILLOR W. E. RICE, C.B.E., J.P., Mayor of Westminster and a past-president of the London Master Builders' Association, has just announced details of his Appeal for funds for the Y.M.C.A. The public inauguration of the Appeal will take place at a dinner to be given by Councillor Rice at the Park Lane Hotel on February 21. The Viscountess Jowitt is a vice-president of the Appeal and many other distinguished personages have agreed to serve on the Appeal Council.

Mr. Alfred Barnes, M.P., Minister of Transport, is to open a public exhibition on February 8, at Charing Cross London Transport station, the theme of which will be "In Youth's Service for Over 100 Years" and in which the Y.M.C.A. will take a prominent part.

Councillor Rice has always taken a keen interest in Y.M.C.A. work, especially its welfare work for H.M. Forces. The British Y.M.C.A. operates a farm-training scheme and a number of special hostels for apprentices, students, and agricultural workers. Councillor Rice has purposely set no target for his Appeal but hopes it will be generously supported.

Professional Announcements

MESSRS. FRY, DREW AND PARTNERS wish to announce that Mr. Maxwell Fry and Miss Jane Drew have, with M. Pierre Jeanneret, been appointed joint architects for the building of the new capital city of the Punjab for the Government of the Punjab, India. M. le Corbusier is appointed consultant to the Punjab Government for the scheme.

MR. Maxwell Fry is leaving for India at once, and Miss Drew will remain in the United Kingdom for the present to deal with outstanding work of the practice in England and West Africa.

At a date later to be announced, the firms of Messrs. Drake and Lasdun of 29, Sackville-street, W.1, and Messrs. Fry, Drew and Partners, will be joined under the title of Fry, Drew, Drake, Lasdun and Partners, to carry out the joint practices from 63, Gloucester-place, London, W.1.

MESSRS. WATKINS, COOMBES AND BARRELL, F./A.R.I.B.A., Chartered Architects, of Heslam Chambers, 191, High-street, Lincoln, have taken into partnership MR. G. W. FAIRBAIRN, A.R.I.B.A. The style of the firm will now be WATKINS, COOMBES AND PARTNERS, of the same address.

COMING EVENTS

Tuesday, February 13

HOUSING CENTRE TRUST.—"Five Years' Housing in a Country District," by Mrs. Spurgin, J.P. 13, Suffolk-street, Haymarket, S.W.1. 1.15 p.m.

INCORPORATED INSTITUTE OF BRITISH DECORATORS.—"Decorative Veneers," by Mr. L. C. W. Jenkins. Royal Society of Arts, 6, John Adam-street, Adelphi, W.C.2. 6.30 p.m.

Wednesday, February 14

L.M.B.A. (Central Area No. 1).—Luncheon and 94th Area general meeting. Derry and Tom's Restaurant, Kensington High-street, W.8. 1 p.m.

L.M.B.A. (NORTHERN AREA).—Luncheon meeting at which Mr. G. H. A. Hughes, Director L.M.B.A., will be present. Hendon Hall Hotel, Ashley-lane, N.W.4. 1 p.m.

INSTITUTION OF STRUCTURAL ENGINEERS.—"The Ultimate Strength of Prestressed Concrete," by Professor A. L. L. Baker. 11, Upper, Belgrave-street, S.W.1. 6 p.m.

ROYAL SANITARY INSTITUTE.—Discussions, on "The Problem of Reduction of Atmospheric Pollution" and "The Measurement and Survey of Atmospheric Pollution." 90, Buckingham Palace-road. 2.30 p.m.

INSTITUTION OF HEATING AND VENTILATING ENGINEERS.—A.G.M. I.H.V.E., Storey's Gate, London, S.W.1. 2.30 p.m.

HAMMERSMITH SCHOOL OF BUILDING AND ARTS AND CRAFTS.—"Plumbing in Lead Sheet and Pipe," by Mr. L. E. Allen. School of Building, Lime-grove, Shepherd's Bush, W.12. 7.30 p.m.

Thursday, February 15

UNIVERSITY OF LONDON.—Last of two lectures on "Thoughts on Architecture To-day," by Mr. Michael Waterhouse, M.C., PP.R.I.B.A. University of London, W.C.1. 5.30 p.m.

SOCIETY OF CHEMICAL INDUSTRY.—"Paint and Design," by Dr. L. A. Jordan. 11, Upper Belgrave-street, S.W.1. 6 p.m.

FROM "THE BUILDER" OF 1851

Saturday, February 8, 1851

CONSERVATORIES OPENING INTO THE DWELLING-HOUSE. — Every day the many gallons of water given to the plants rise in vapour to settle on the various objects within reach. Therefore, in the drawing-room, or the room adjoining the conservatory, there should be nothing that will take injury from damp, because it will settle in pure water on the walls, and sink into tapestry, curtains, the backs of paintings, the covers of sofas and chairs; in short, it will lie or hang in drops on whatever will not absorb it, and sink into all that will. There is no good without its evil; no enjoyment, without some corresponding trouble to maintain it. The conservatory—so great an ornament, so exquisite a luxury—may, without care, be the means of producing sickness into the house, destroying the furniture and ornaments, and doing endless mischief, unless it be counteracted by attention. Let the throwing open of the doors be the exception, and not the rule. Keep the damp air from the house as you would a pestilence.

CORRESPONDENCE

The Quantity Surveyors' Dilemma

TO THE EDITOR OF *The Builder*.

SIR,—With reference to your leading article, The Quantity Surveyors' Dilemma, in your issue of February 2, may I be permitted to say that the solution to the present problem of tendering procedure, as you hinted, is that the specification, dropped so inadvertently from the 1939 Form of Contract, should be reintroduced as a contract document. This would not only reduce the lengthy descriptions which have to be included in the Bill of Quantities, and which seems to be a bone of contention with some members of the building industry, but would also provide the quantity surveyor with the information which he now so sadly lacks.

American procedure has been quoted on numerous occasions recently in the technical Press. Tenders are not requested from contractors in that country until details have been fully prepared. Let us have it here, in this country, that the quantity surveyor is not asked to produce his bill of quantities before this stage has also been reached.

The time taken to produce the required bill would be considerably reduced and the finished work would not be, as at present in the majority of cases, an inspired guess on the part of the quantity surveyor.

E. WHITTAKER.

97, Tootal-drive,
Salford, 6.

TO THE EDITOR OF *The Builder*.

SIR,—As a member of the rank and file of the quantity surveyors' profession, I read your article under the above heading on February 2 with great interest. Your diagnosis of the dilemma is undoubtedly correct, but I cannot agree that the trouble was caused by dropping the specification from the contract documents. Many works are in progress in London at present where the specification is part of the contract, but this does not restrict the number of variations. After the word "go," the Americans apparently make very few variations but for any that are made the client pays heavily. English practice tends to large numbers of variations for which the client pays only slightly more than the contract rates.

Thus we are concealing from the client and the architect the dislocation and confusion consequent on hand to mouth building and on large numbers of variations. If they were acquainted with the full cost, then I am sure that they would try harder to avoid all unnecessary vaccilation and variation.

Suggestions for making quantities less precise are greatly to be deplored. For example, adding extra quantities in lieu of items for eaves course, beam filling, etc., would mean that the bill of quantities would be quite useless for the assessment of the materials required for the works. This does not mean that all revision of the S.M.M. is superfluous.

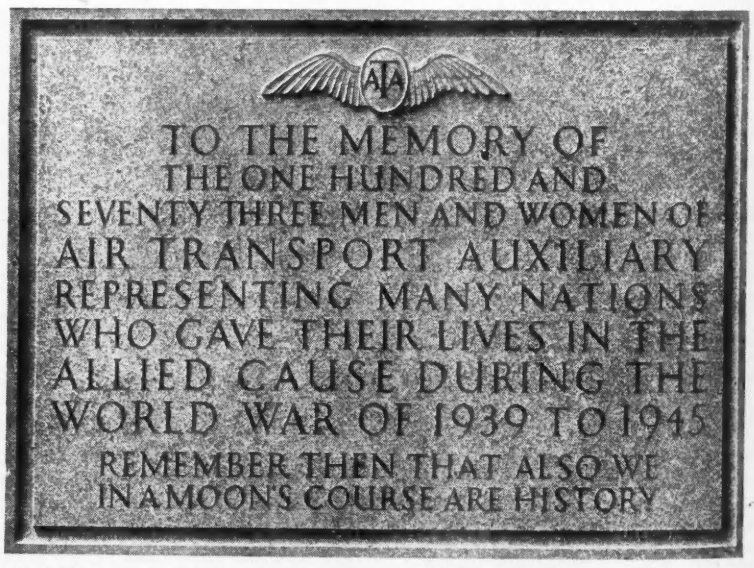
To recapitulate: America has few variations but high extra cost for such variations, while England has many at slight extra cost. Therefore, it is obvious that the most effective way to reduce the number of variations is to increase their cost. The best method of doing this is to make all additional work in variations subject to a percentage increase, such increase to be stated in the contract or on the form of tender.

A.R.I.C.S.

The Q.S. and Local and Nationalised Government Services

TO THE EDITOR OF *The Builder*.

SIR,—I must comment on the effrontery of "Local Government Architect" in your issue of February 2. This voice from the twilight of anonymity seems to have forgotten the days when architects chafed under the hegemony of borough engineers and county road surveyors, and the active campaign of all interested parties, including the quantity surveying profession, which


AIA
TO THE MEMORY OF
THE ONE HUNDRED AND
SEVENTY THREE MEN AND WOMEN OF
AIR TRANSPORT AUXILIARY
REPRESENTING MANY NATIONS
WHO GAVE THEIR LIVES IN THE
ALLIED CAUSE DURING THE
WORLD WAR OF 1939 TO 1945
REMEMBER THEN THAT ALSO WE
IN A MOON'S COURSE ARE HISTORY

MEMORIAL TO THE AIR TRANSPORT AUXILIARY: Designed and executed by F. P. Morton and dedicated in St. Paul's on September 23. It is in Hoptonwood stone, 2 ft. 6 in. by 1 ft. 9 in., the lettering being coloured light blue

elevated the architects to a recognised place in public life.

Your correspondent merely repeats the arguments put forward by civil engineers 40 years ago in respect of architects under their control and wishes to apply it to quantity surveyors and specialist engineers. This is arrogance, indeed! To talk of beggars on horseback. . . .

Sir, your correspondent's arguments simply will not do. Already two Metropolitan Boroughs (Chelsea and Wandsworth) have mounted his platform and have put their architectural departments back under their engineers. Cannot architects take the statesmanlike view of recognising that the establishment of separate identities and an honoured place for specialist professions in the local and nationalised Government services can only strengthen their own position?

In conclusion, I should refer to your correspondent's statement that ". . . . in its most completely developed state the (architect's) department will comprise . . . quantity surveyors . . . and, perhaps, a direct works staff." Surely, where the architect (or engineer) has charge of a direct works staff the public weal is best served by the existence of an independent quantity surveying department so that the quasi-judicial and impartial functions of the quantity surveyor not only are carried out fairly and justly, but also appear to be so carried out by officers directly responsible to the mayors, aldermen, councillors (and burgesses) of their authorities.

C. R. VINYCOMB.

4, Sundown-road,
Sheffield, 9.

TO THE EDITOR OF *The Builder*.

SIR,—I regret that a typist's error crept into my letter published on Page 166 of your issue of February 2.

"Just as the architect has no illusions about the independency of the quantity surveyor . . ." should have read "Just as the architect has no illusions about his dependence on the quantity surveyor. . . ."

I apologise for the mistake.

LOCAL GOVERNMENT ARCHITECT.

Cheshire.

Official Jargon

TO THE EDITOR OF *The Builder*.

SIR,—It occurs to me that some of your readers might be interested in a choice piece of jargon which I came across this week in a Bill of Quantities. One of the items I had to price was described as "break up 9-in. bed of concrete and *dispose of arisings.*"

In order to price the item, I inquired what it meant and was told that it was intended to mean "cart away."

Needless to say, the quantities were in connection with a building job for nationalised transport.

EDWARD W. CORDERY.

27, Albemarle-street,
London, W.1.

The Rise and Fall Clause

TO THE EDITOR OF *The Builder*.

SIR,—It is with amazement and something akin to disgust that I read in your correspondent's article on Building Industry Organisation in your issue of January 26, that he deprecates the rise and fall clause being included in current building contracts. I can only assume that either your correspondent is a keen supporter of the football pools or he is not a builder himself. We, as a community, are contractors, not gamblers.

What, may I ask, is more correct and fair than that a building owner should pay for that which he receives? As for suggesting that builders are "hedging and refusing to face up to their responsibilities," may I point out that all materials and labour, the cost of which increases during the progress of a contract, are claimed as a *net* addition and thus a portion of our work is carried out at a *loss*. Add to this the trouble and expense in preparing schedules showing these increases (or reductions!) and you will appreciate that we "could care more" regarding this issue.

His suggestion that by eliminating this clause we should be an active agent in getting prices reduced is, of course, blatantly ridiculous, an obvious parallel being the meat situation at the moment with the Argentine. The law of supply and demand rules prices, and if the manufacturer cannot sell to "A" he will find a market elsewhere with "B" and "C."

May I conclude by saying that of every contractor I have recently questioned on this subject, all state that they wish they were able to revert to the pre-war days of non-fluctuating costs of labour and materials whereupon overheads would be reduced and production increased. Why pick on the building industry alone to check the upward spiral of the cost of living?

J. P. A. CLYMER.

Great Yarmouth.

Draft Taking-off: Has a Builder Right of Inspection?

TO THE EDITOR OF *The Builder*.

SIR,—I have read, with interest, the letter from "North-West Builder," published in your issue of January 26, and should like to reply to his query as follows:—

Generally, I think it is considered that all technical notes, measurements and relative data comprising the "taking-off" in preparation for the bills of quantities, are the private property of the quantity surveyor, and do, in effect, represent the "tools of his profession," which need not be disclosed to a third party to substantiate the final bill as submitted to tender. It therefore follows similarly that the "draft taking-off" need not be produced for a third party's inspection when work is being measured.

A quantity surveyor of experience, of course, need have no doubts as to the accuracy of his work and I personally have willingly produced the original taking-off details at times when it was felt a point could better be explained to a contractor, and settled to the satisfaction of both parties.

In conclusion, it would appear to be largely a matter of method of approach to the question, by a contractor requesting the possibility of a sight of these documents, and the diplomacy of the quantity surveyor in relation to the particular job. I would, however, emphasise the remarks in my first paragraph as to the private nature of these details, although co-operation on this matter with a contractor will often clarify and settle a question that would otherwise tend to develop into unnecessarily prolonged negotiations.

SOUTH-EAST QUANTITY SURVEYOR.

TO THE EDITOR OF *The Builder*.

SIR,—"North-West Builder" asks if a contractor is allowed to inspect the "taking-off," whereas your heading to the letter says, "Has a builder right of inspection?"

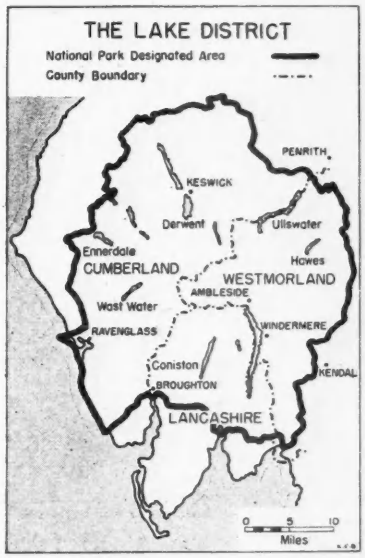
The two questions are different, and I am not sure that he has a "right."

I have never known a genuine request to be refused, and if variations are being adjusted by the Q.S. in conjunction with the contractor it is necessary to refer to the taking-off.

For "North-West Builder's" information, there is no such thing as a "draft taking-off."

G. V. YATES.

93, Chalklands,
Bourne End, Bucks.



LAKE DISTRICT NATIONAL PARK

Designation Order Signed

THE Chairman of the National Parks Commission, Sir Patrick Duff, signed last week the designation order for the Lake District National Park. The order will be submitted for confirmation to the Ministry of Town and Country Planning. It is the Minister who ultimately decides what the final boundary of the Park will be. Until the Minister has made his decision, the National Park as such cannot come into existence.

With an area of 554,000 acres (866 square miles), the Lake District is likely to be one of the largest of the national parks to be designated by the Commission. The boundaries as shown in the order are substantially those proposed in 1947 by the Hobhouse Committee on National Parks.

Snowdonia National Park

THE CHAIRMAN of the National Parks Commission. Sir Patrick Duff, signed, on February 6, the Snowdonia National Park (Designation) Order, the effect of which is to constitute the land to which it relates a National Park. The area, the boundaries of which are substantially those proposed in 1947 by the Hobhouse Committee on National Parks, comprises approximately 837 square miles situated in the counties of Caernarvon, Denbigh and Merioneth.

COMPETITION NEWS

Extension to Medical Buildings, University of Edinburgh

MR. A. G. R. MACKENZIE, A.R.S.A., F.R.I.B.A., who acted as assessor in the open competition for designs for the extension of the Medical School on the north side of George-square, Edinburgh, the results of which were announced in *The Builder* of December 29, 1950, has issued the following report on the entries received :—

Thirty-nine designs were submitted for this competition and after an exhaustive examination of all the drawings, the study of various reports and the checking of areas and costs, I have come to the conclusion that, while none of the designs present an entirely satisfactory solution, No. 6 [W. N. W. Ramsay, A.R.I.B.A.,] will most nearly do so. I therefore award its author the first premium. To the author of Design No. 26 [P. N. Taylor, A.R.I.B.A.] I award the second premium, and to that of Design No. 9 [A. J. M. Tolhurst, A.R.I.B.A.] the third.

The conditions, admittedly, presented a very difficult problem inasmuch as they envisaged the designing of a building to give the maximum accommodation on that part of the site already available, which at the same time would not be out of harmony in form, materials and scale with the remainder of George-square, whether that remainder was re-designed (as proposed by Dr. Holden) or not, and many otherwise well-considered schemes have failed by neglecting to give due stress to one or other or these somewhat conflicting requirements.

I find that alone among the competitors, the author of No. 6, placed first, has designed a façade to George-square which, while not in any way reproducing the existing eighteenth century domestic architecture, yet is entirely in harmony with it so that the general character of the square may be maintained whether the remainder is re-designed or not, and I consider it fortunate that as a result of the competition a design has been obtained which goes far to restore the architectural unity of the square, referred to by Sir Patrick Abercrombie in his report on the City of Edinburgh as having been destroyed by the existing nineteenth century buildings on the site.

All the accommodation required on the areas set apart for part I and part II respectively has been provided, though this cannot be said to have been carried out in the most efficient manner. I refer particularly to the circulation, the adoption of a uniform width of 15 feet for classrooms, laboratories, etc., the planning of the physiology practical classroom and the placing of dissecting room No. 2. Many of these faults appear to be due to lack of familiarity with the requirements of a medical school and they would no doubt be eliminated, after further consultation with the heads of departments, when the modifications envisaged under clause (6) are being prepared.

The plan, however, is of very flexible character; its well-lit blocks arranged round well-ventilated courtyards have certain advantages over the closed light-wells shown on many of the designs, and I consider that within the general framework, the planning could be amended to meet all the reasonable requirements of the University.

Upon checking the author's statement of cubic contents of the building, it was found that the estimated cost should be £1,296,413. I consider the design could be carried out within 10 per cent. of this amount ; plus any increase due to rise in cost of material and labour since December, 1949 (the date the conditions were issued).

Design No. 26 is placed second because of its excellent plan, which gives all the accommodation asked for in parts I and II respectively arranged in a convenient and straight-forward manner, with ample and direct circulation for students and staff, and with all rooms amply lit and well-proportioned to their purpose. The design is presented by an excellent set of drawings, giving all the information required to show the competitor's proposals, making the scheme very easy to understand. The rather crude façade to George-square, however, with its recessed centre block would be quite out of harmony with the remainder of George-square, whether that remainder was re-designed or not.

Upon checking the author's statement of cubic contents, it was found that the estimated cost would be £1,196,750, and I consider the design could be carried out within 10 per cent of this amount ; plus any increase due to rise in cost of material and labour since December, 1949.

Design No. 9, placed third, again gives all the accommodation asked for and is a thoroughly practical and workable scheme. The competitor has provided ample circulation and has considered the light and proportions of the various rooms in relation to their purpose. The design, however, is lacking in amenity and the façade to George-square is unsuitable.

I consider this design could be carried out at a cost not exceeding 10 per cent. of the author's estimate of £1,162,750 ; plus any increase due to the rise in cost of material and labour since December, 1949.

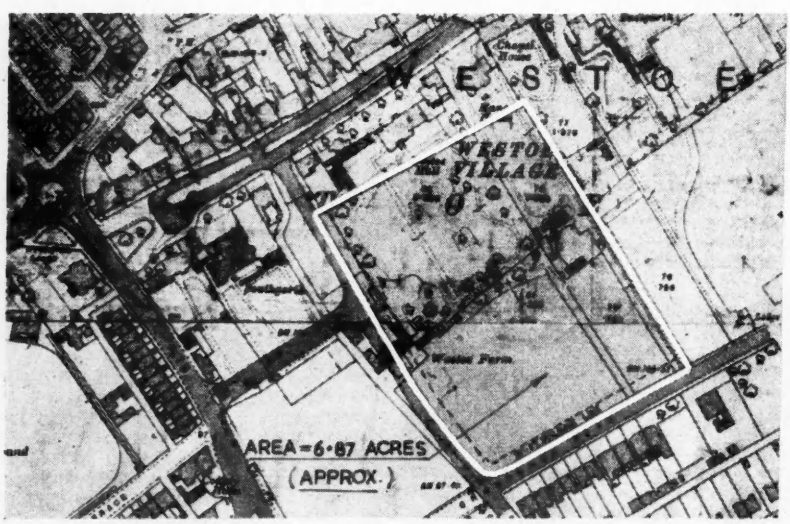
It is unfortunate that some of the other competitors, whose designs would have been worthy of mention, have misread the conditions and gone beyond the boundaries of the site available for part I. The only purpose of mentioning the demolition of the Agriculture and Forestry building in the paragraph in the conditions on lighting, was that competitors should not be hampered by restrictions of light for the design of part I.

AT THE CLOSE of the public exhibition in Edinburgh, the three premiated designs will be sent to the R.I.B.A. for exhibition at 66, Portland-place from Tuesday, February 13, to Monday, February 19, inclusive (10 a.m. to 7 p.m.; Saturday, 5 p.m.).

Marine and Technical College, South Shields

THE COUNTY BOROUGH of South Shields invite architects to submit designs in competition for a proposed new marine and technical college, which it is their intention to proceed with. Mr. S. W. Milburn, M.B.E., M.C., F.R.I.B.A., is assessor and premiums of £500, £250, and £150 will be paid. Conditions and site plan are obtainable on deposit of £2 2s. from the Director of Education, Town Hall, South Shields, to whom any questions may be addressed before March 21 next, and to whom designs must be sent by July 21.

The site is one of 6.87 acres (shown outlined on site plan) and may be assumed to be clear of all buildings. Provision for playing-fields need not be made on the site. Strongly reinforced foundations should be adopted as the area is an active mining one. Height should not exceed two storeys, with a small three-storey block if desired. Building should preferably be traditional, and must be fire-resisting. No particular type of design is insisted upon, but it should be expressive of its purpose and particularly suitable for its location. The sum of £100,000 is available to cover the cost of the work set out in the first schedule, and a further sum of £320,000 for the completion.

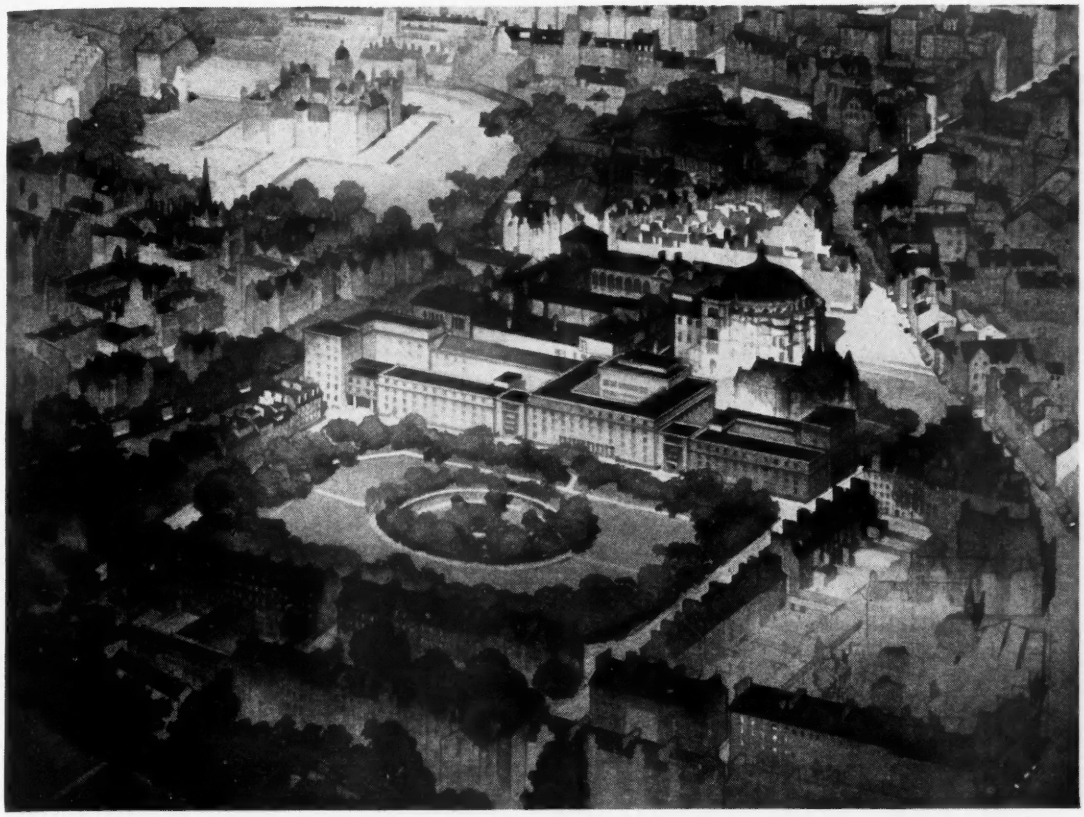


Competition for Marine and Technical College, South Shields : Site plan

The Herzl Memorial

THE World Zionist Organisation, in conjunction with the board of trustees for Herzl's Tomb, invite Jewish architects, sculptors and planners throughout the world to submit designs for the proposed memorial to Herzl's Tomb, and the park and traffic layout of the immediate vicinity. The memorial is to be erected on Mount Herzl, Israel. The assessors are: B. Locker, A. Barachyahu, Dr. L. Lauterbach, J. Metrikin, J. Pinkerfield, Prof. Y. Ratner, H. Rau, J. Weitz, and N. J. Aslan. The eleven premiums total £5,000.

Conditions from The Secretary, The London Committee, Herzl Memorial, 77, Great Russell-street, London, W.C.1, enclosing two guinea deposit.



Perspective view of winning design, showing its relation to George-square

ARCHITECTURAL COMPETITION

EXTENSION TO MEDICAL SCHOOL, UNIVERSITY OF EDINBURGH

WINNING DESIGN: W. N. W. RAMSAY, A.R.I.B.A. (McNAIR, ELDER & RAMSAY), ARCHITECT

THE following notes on the extension to the University of Edinburgh Medical School, illustrated on these pages, have been taken from the report prepared by Mr. W. N. W. Ramsay, A.R.I.B.A., who submitted the winning entry in the competition.

Grouping of Existing Buildings

When the area bounded by Meadow-walk, Bristo-street and the north side of George-square is cleared of existing buildings, the triangle of buildings enclosed by these streets has a natural centre in the courtyard to the south of the McEwan Hall. If the existing School of Music is removed it becomes necessary from an aesthetic point of view, to close the courtyard on the fourth side by a large mass of building of about the same height as the medical block and the McEwan Hall. It is found that the centre of interest when approaching from the north is then the enlarged courtyard so formed. This enlarged courtyard would then draw the centre of gravity of the triangle away from Meadow-walk to which the present mass of the medical blocks tends to draw it.

The large block mentioned above can be so placed as to form a central feature to George-square, dominating this square to the north if made slightly higher than the remainder of the buildings in the square, which are all of similar height. By keeping the remainder of the north side of the square to about the same height as the buildings on the other sides, the central dominant feature can take the main point of interest away from Meadow-walk to which any addition to the existing medical block tends to draw it.

Assuming a central mass to the south of the McEwan Hall courtyard, two problems arise at the Meadow-walk end of the site. The first is the treatment of the great difference in height and weight between the existing Medical Block and the buildings of George-square. The second is one of composition towards the square caused by the falling away of the contours towards Meadow-walk, which gives a very weak and ragged look to this corner as seen from Meadow-walk.

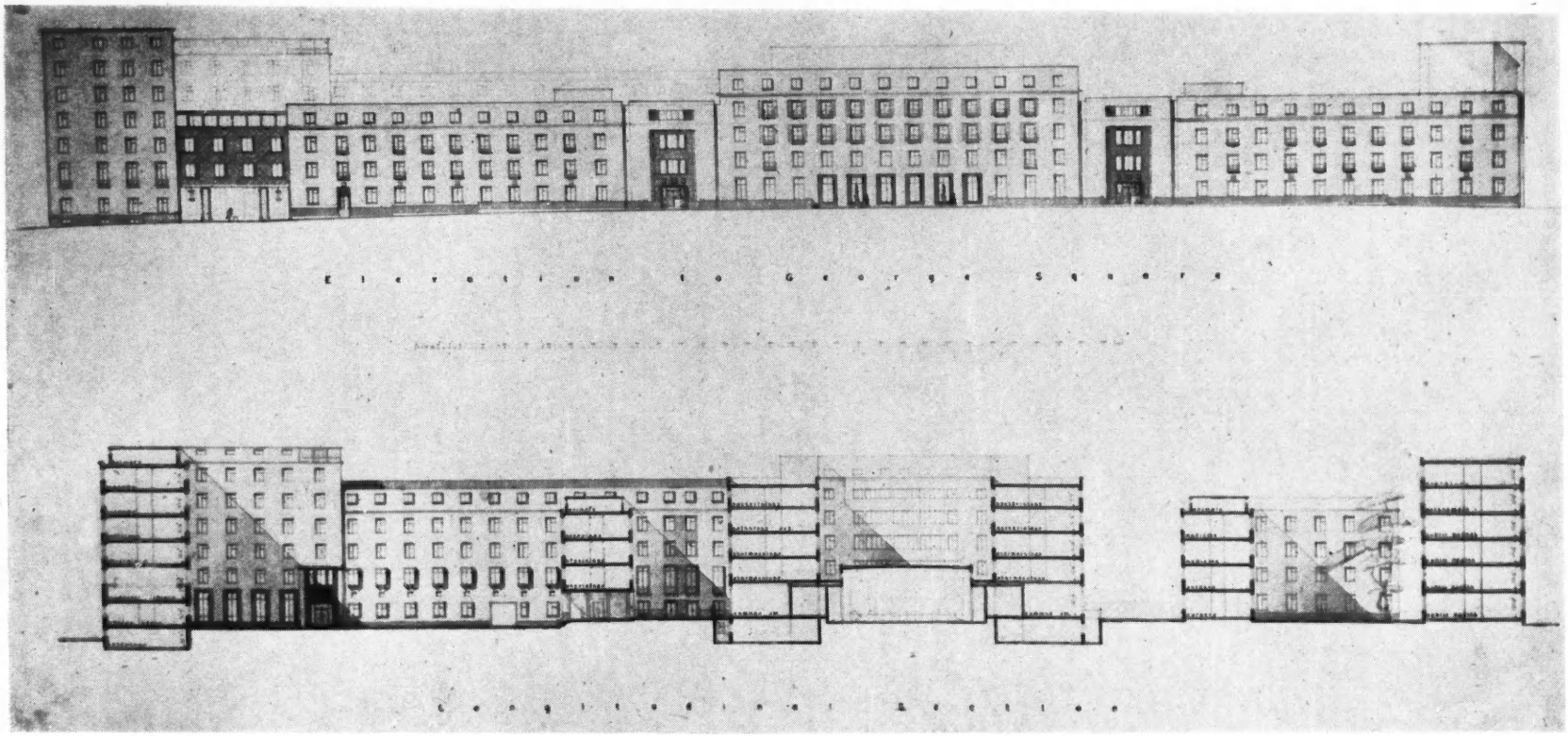
A scheme is presented which appears to solve both problems simultaneously.

A screen of new buildings is built to the height of the existing medical block and is carried forward to the building line at George-square at the Meadow-walk end. This provides a bulk strong enough to fit the existing medical block. In elevational treatment it is quite self contained, the link with the existing block being in the nature of a glass screen.

The street to the west of George-square is extended into the new site as a quadrangle forming a break between the high portion of the new building and the section to the George-square frontage. The drop in height between the two sections has been made in one step to emphasise this height difference.

Grouping of New Buildings

The two blocks (1) are four storeys in height to agree with the remaining sides of the square. Block (2) is carried up another storey to the same height as the centre portion of the existing medical block. Blocks (3) and (4) are the same height as the roof of the existing Medical Block. Block 4 replaces an



Elevation to George-square and longitudinal section

existing five-storey tenement which stops the vista past the existing Students' Union.

The west side of George-square is carried through a portico into a quadrangle (5) from which the main access to part 1 is arranged. This not only removes the bulk of the student traffic from the square but also allows the cloaks and main vertical circulation (7) in part 1 to be near the existing building. This vertical circulation can therefore serve both buildings conveniently. Vertical circulation has also been planned at the East end of the existing Medical Block (8). The actual links with this block are glazed gangways.

Angles of Light

In considering angles of light, advantage has been taken of the fact that there are no important rooms on the south wing of the lower ground floor of the existing medical building to reduce the distance between it and the new block while still giving a good light angle to all upper windows. On the north side of the new buildings in part 1 the ground floor is occupied wholly by cloakrooms and rooms which do not require good daylight.

In the scheme as presented it is not considered feasible to incorporate the School of Music. The block plan has been shown with the School of Music removed forming one large courtyard.

Materials to be Used

The building is to be a steel framed structure. The external walls to be of grey stone slabbing 5 in. thick with 4½ in. brick backing 2 in. cavity and 3 in. moler block inner skin having plaster finish.

Internal partitions to be of light alloy framed partitions partly glazed. Flat roof to be constructed of concrete hollow beams with rock asphalt finish. Outer doors to be of extruded bronze sections glazed with Georgian wired glass. Internal

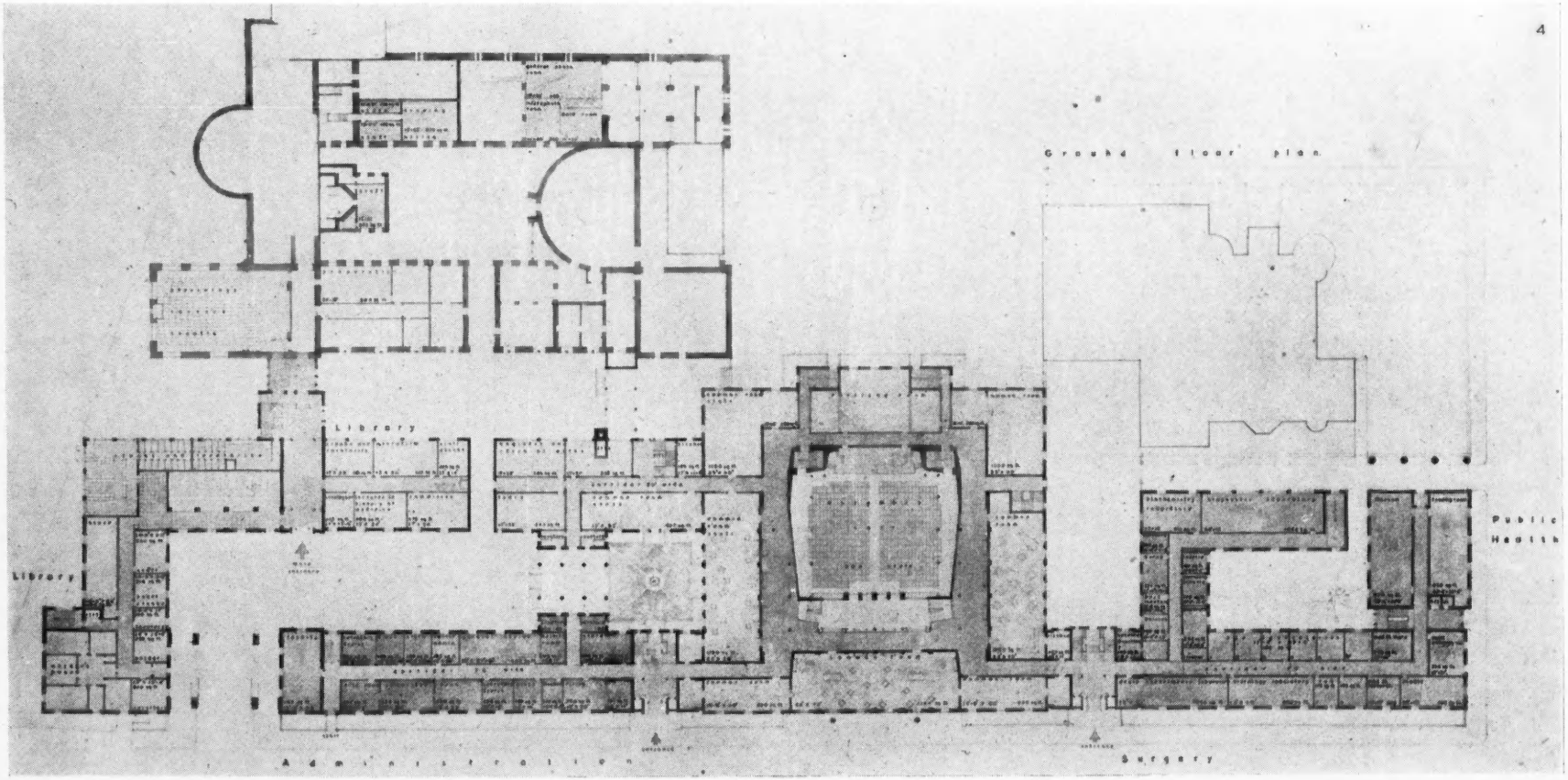
doors to be flush panelled. Staff corridors to be rubber tiled or cork linoleum ; laboratories and class rooms and Assembly Hall to be of hardwood block flooring.

The heating system is an accelerated high pressure hot water system with recessed convectors and radiant panels in ceiling to leave lower walls clear for fitting. It is suggested that the boilers be oil fired. Natural ventilation by opening windows has been relied on generally. To heat and ventilate the Assembly Hall a modern plenum system is suggested.

Architectural Style

It is considered that a main characteristic of the existing buildings in George-square is the extent to which interest is achieved by variations of plane on an otherwise flat facade. The new facade to George-square is therefore an essay in recessed and projected surfaces of varying materials on a building which preserves the existing building line and the existing sunk areas in front.

The total cubic contents of the proposed buildings are 5,056,400 cubic feet, which at a cost based on a cube rate of 5s. per cubic foot, is equivalent to £1,264,100.



COMPETITION FOR EXTENSION TO MEDICAL SCHOOL, UNIVERSITY OF EDINBURGH : Winning design : ground-floor plan

AMSTERDAM DOORWAYS

With notes and photographs by

H. DENNIS JONES

IN any building the entrance is an important feature, and it is something that requires special emphasis and attention when houses have to be built in terraces or packed close together. The eighteenth-century builders of Amsterdam's "Golden Age" realised this very clearly, and the imposing sets of double steps leading up to the entrances of the "patrician houses" of that period are among the town's most noteworthy architectural features. In fact, their influence has clearly lasted until our own day, and has nourished in the Amsterdammers an ineradicable taste for decorative and elegant entrances.

Fig. 1.—The people of Amsterdam think every flat should have its own street door, and they actually apologise for this entrance (Lau Peters, architect; built, 1949) because it gives access to a staircase serving no less than eight flats. The carving above the door is a direct adaptation of the stones still found on many seventeenth century houses in Amsterdam, when such sculptures served to identify the dwelling.

Fig. 2.—Entrances to semi-detached villas built in yellow brick, in the Muzenplein. The forged ironwork is here put to good decorative use.

Fig. 3.—This entrance to flats in Zaanstraat was designed by M. de Klerk, one of the leading "Amsterdam School" architects, in 1920.

Fig. 4.—Entrance to flats in the Churchill-laan, designed by G. Rutgers. Here the most emphasised entrance gives access to the front doors of upstairs flats while those on the ground floor have something less spectacular (extreme left of picture).

Fig. 5 shows a restoration of an eighteenth-century entrance, No. 666 Keizersgracht (one of the three main semi-circular canals of Amsterdam), by the architects Posthumus Meyes and van den Linden. The building is now occupied by the Javasche Bank. It is worth noting that all restoration work of this type in the old part of the town is very carefully supervised by the "Committee for the Old Town," which is under municipal control, but includes many independent architects and experts in restoration work.

Fig. 6 shows another entrance way to flats in the Churchill-laan (architect, G. Rutgers), built in 1930, which is clearly derived from the eighteenth-century model.

Fig. 1. Entrance to eight flats

Fig. 7 shows an entrance to a dwelling designed and built by the Amsterdam City's Department of Public Works (1930). Monochrome gives no adequate indication of the almost Mediterranean gaiety of colours with which the woodwork is decorated.

Fig. 8 provides a delightful study in curves. It is the entrance to the Rijksverzekeringsbank (National Insurance Bank), a tall, white, "functional" building which towers above the residential South suburb of Amsterdam. (Ir. D. Roosenburg, architect; built, 1939). One cannot help feeling that civil servants must inevitably become much more cheerful—and civil—when they have to pass through such an entrance as this each morning on their way to work.

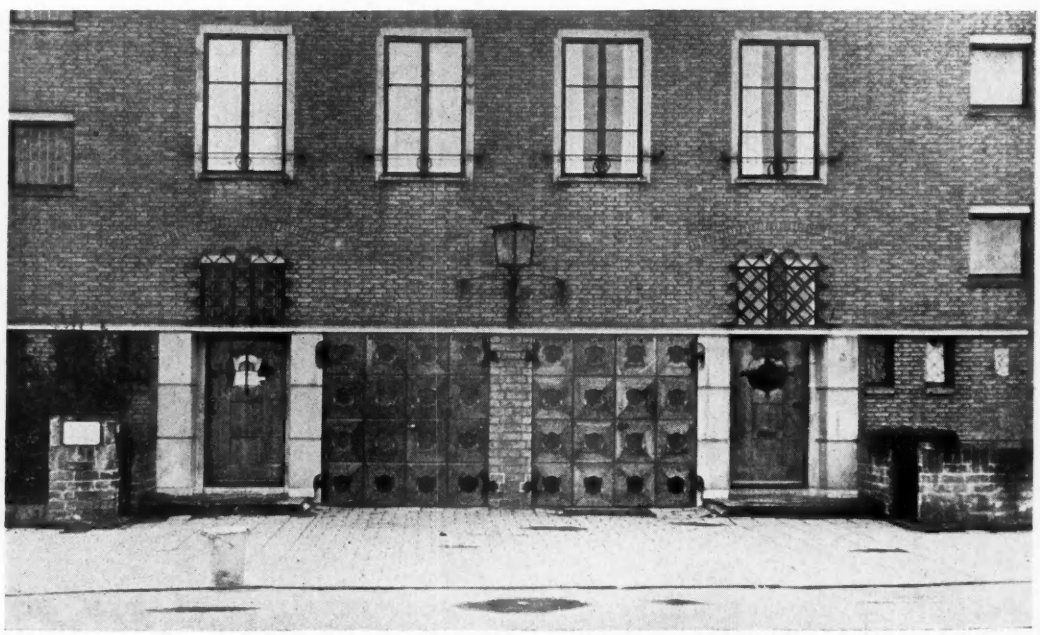


Fig. 2. Entrance to semi-detached villas in the Muzenplein

Fig. 3. Flats entrance in Zaanstraat, designed 1920

Fig. 4. Flat entrances in the Churchill-laan

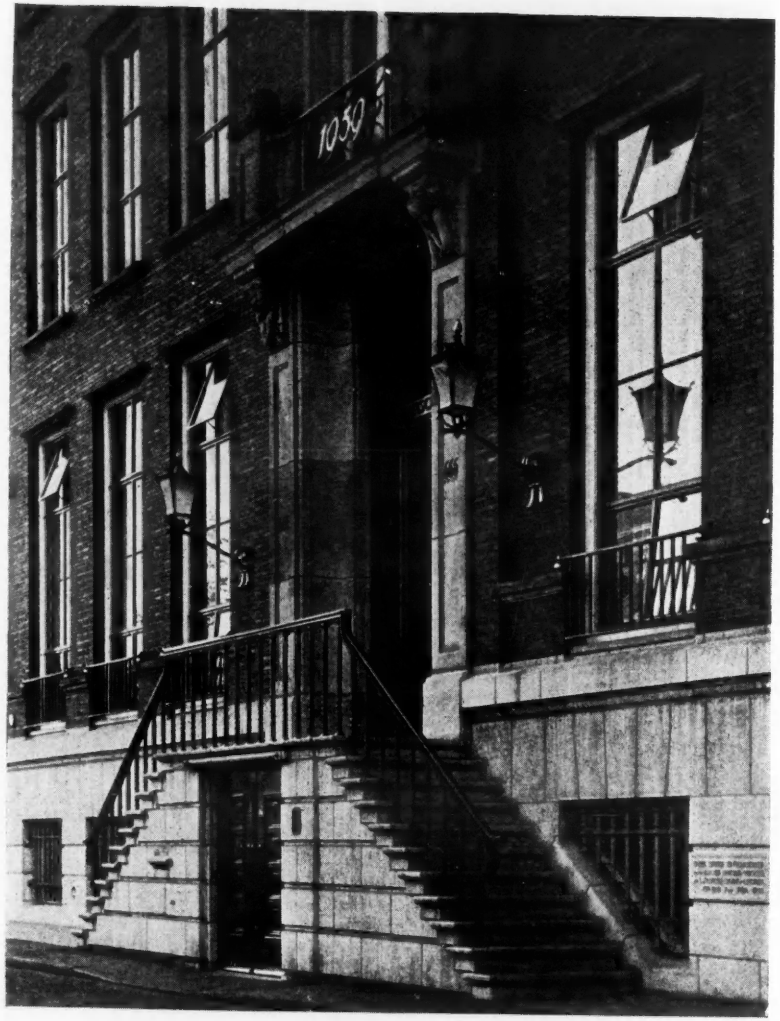


Fig. 5. Restored eighteenth-century entrance, Keizersgracht

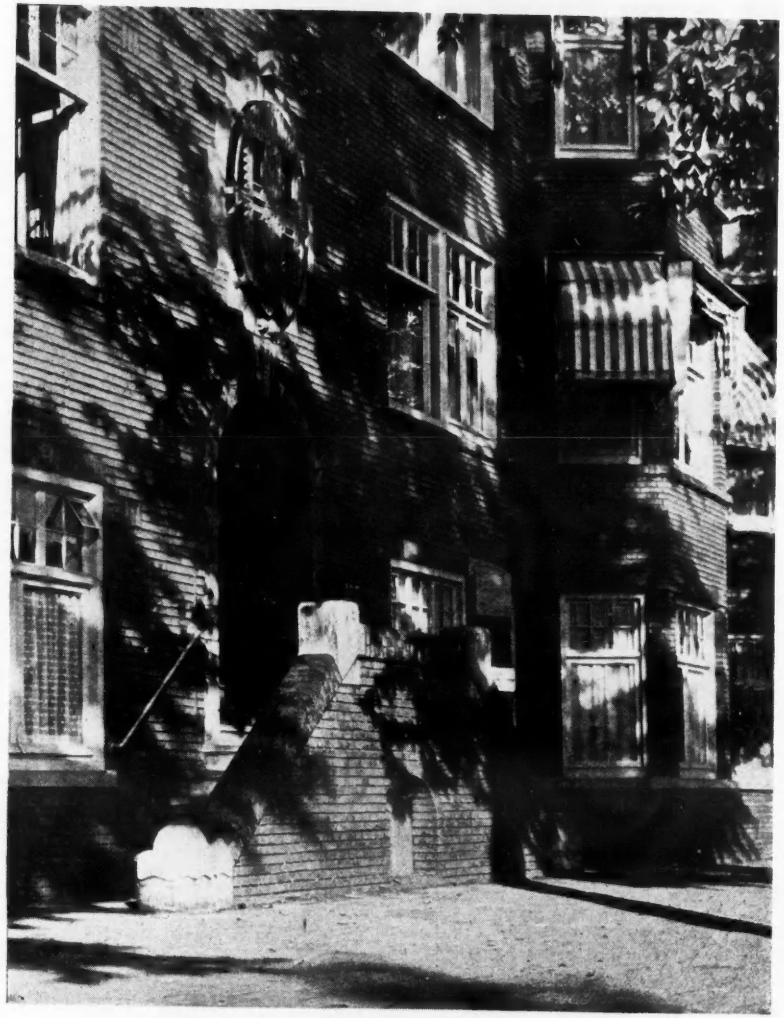


Fig. 6. Another Churchill-laan entrance (1930)

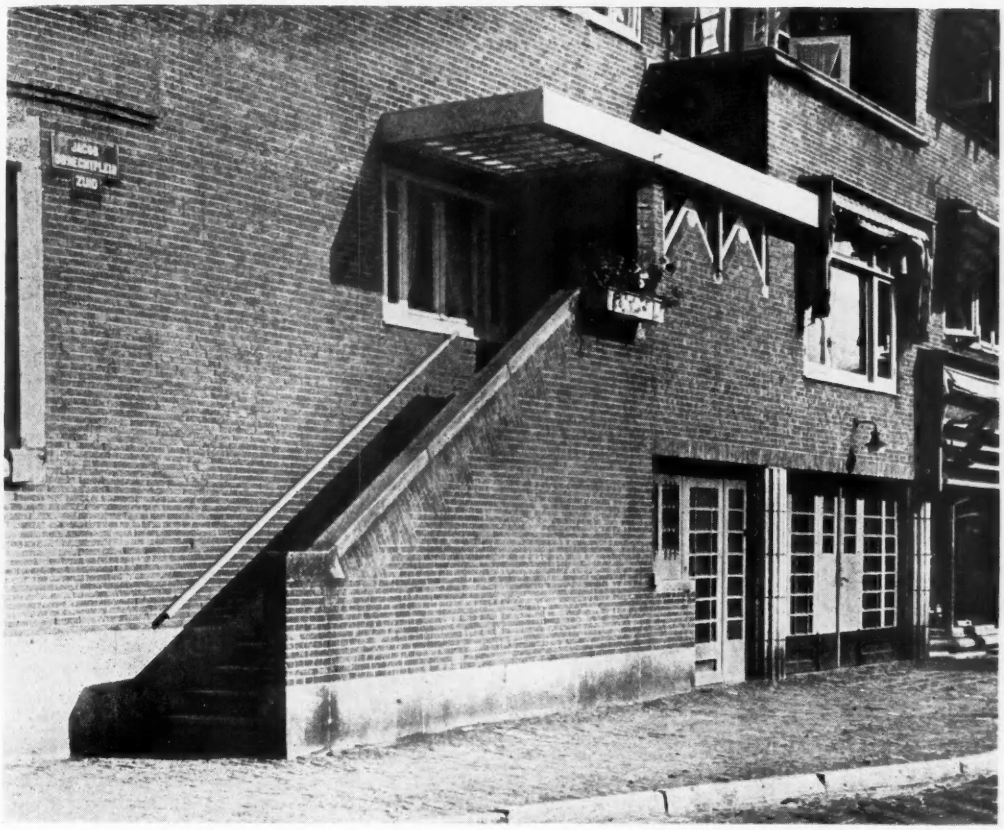
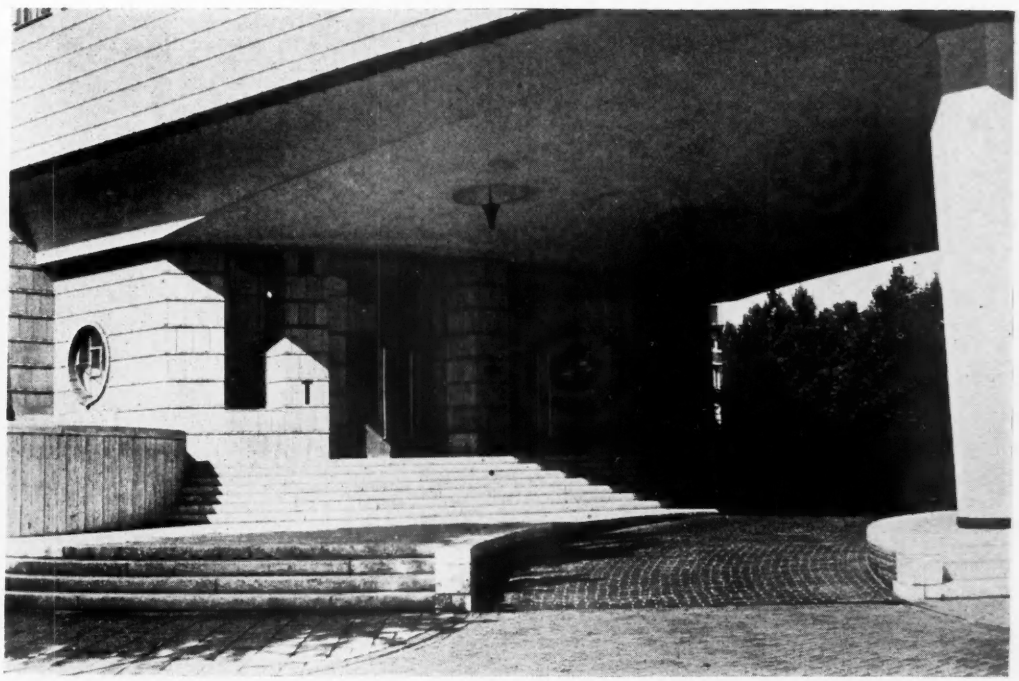
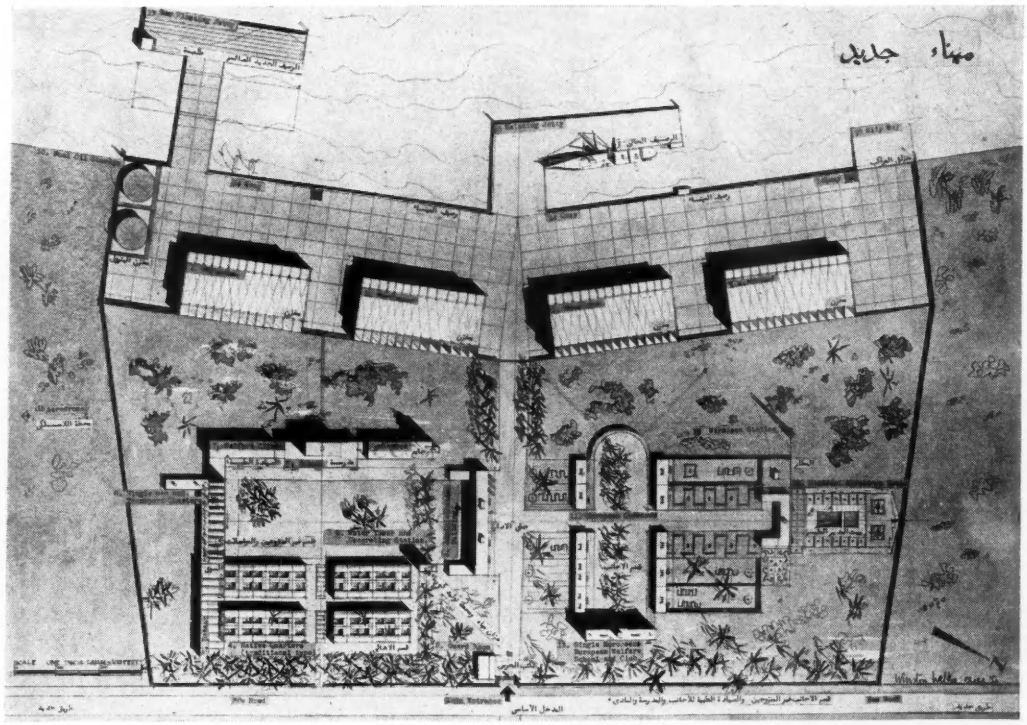


Fig. 7. Entrance to dwelling designed by Public Works Department (1930)



AMSTERDAM DOORWAYS. Fig. 8. Entrance to the National Insurance Bank

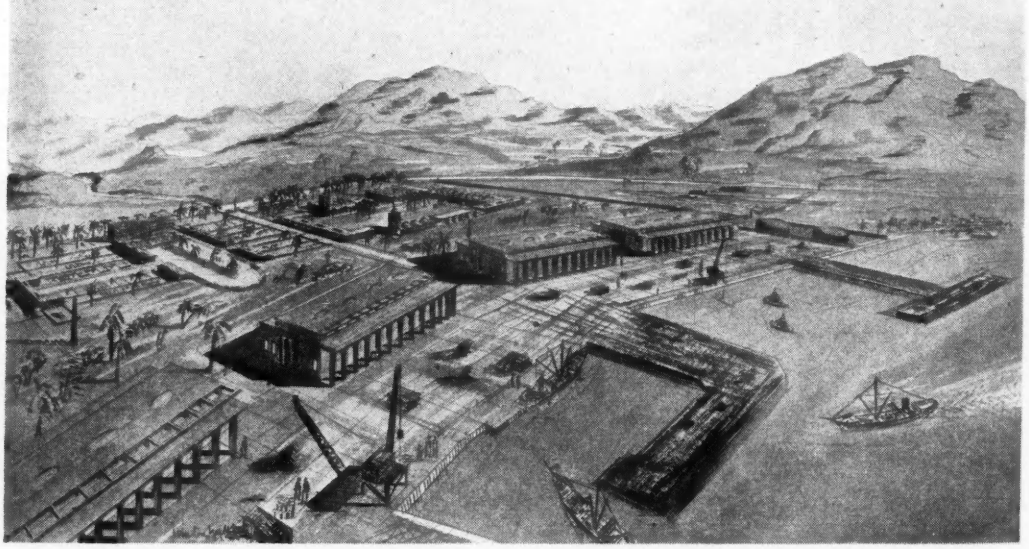


PORT OF AQABA

WINSTON WALKER, F.R.I.B.A., A.A.DIPL., DIPL.T.P., A.R.Ae.S.

THIS scheme is for the development of the existing jetty and town of Aqaba, Transjordan, into a supply and storage port. Since communications within the country are not particularly good, provision has been made for a small airport between the old town of Aqaba and the new port. The intention is to reconstruct the town of Aqaba within the confines of the port, and for this reason the local population are housed in homes of traditional design and construction, modified within the limits of modern research in terms of insulation, etc. A mosque, bazaar, school and clinic are provided, together with recreational facilities. The European quarters are to be grouped together with houses, hospital, maternity clinic, etc., of contemporary design and construction. The first phase of the work will be to deepen the harbour, increase storage space and provide oil storage space, and the remainder of the work will proceed as the port develops.

The architect's clients are Messrs. White Morgan and Co., investment brokers, who were acting on behalf of Mr. Philip Clayton, of Messrs. Hill, Clayton and Co.



MATERIALS in the SOUTH BANK EXHIBITION

2.—The Use of Aluminium and Reinforced Concrete

By JOHN RATCLIFF, A.R.I.B.A., A.M.T.P.I.

THE first article of this series (*The Builder*, January 12) described some general considerations in the use of steel and gave some examples of the use of steel tube. Before dealing with the use of aluminium and reinforced concrete, mention must be made of some structures employing normal rolled-steel sections.

Fig. 1 shows a part of the Transport Pavilion during construction. This pavilion has been designed in three main sections to house full-scale exhibits of locomotives, aircraft and motor-cars. The section shown is that designed for aircraft, and represents, in effect, a part of a hangar which will have large sliding-folding doors across the front which can be fully opened in suitable weather and which will allow access for the aircraft to be suspended from the roof. Apart from the heavy horizontal girder and the two latticed vertical masts with pointed ends, there is interest in the unusual form of roof construction. This employs the stressed-skin principle, which has been used extensively in manufactured articles but little hitherto in steel-framed buildings. It will be seen that there are no roof trusses as such, but that the roof is self-supporting by reason of its corrugated shape. The roof covering is of asbestos sheeting fixed with hook bolts. To the left of the illustration will be seen the roof trusses which are exposed on the exterior of the building, the same principle being followed in the case of the trussed verticals on the rear elevation.

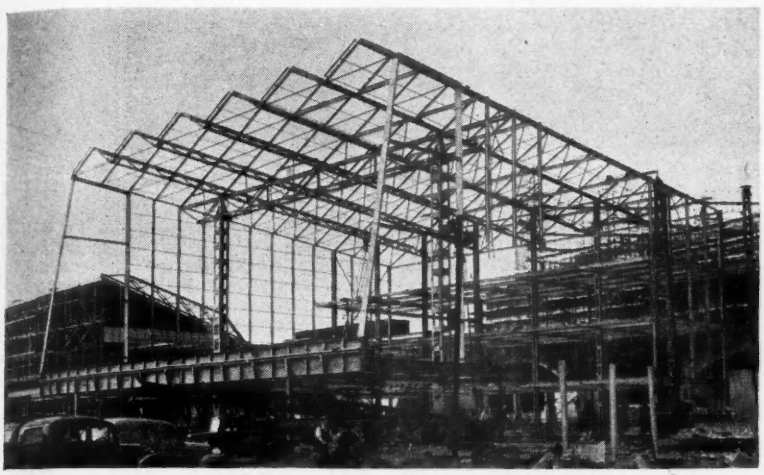


Fig. 1.—Part of the Transport Pavilion under construction

The tower at the Waterloo-road entrance to the exhibition is a case where special care has been taken in the visual design of the steelwork. This tower serves to mark the entrance to visitors crossing Waterloo Bridge from the north bank of the river, and also provides a look-out point over the exhibition site. It has been conceived as an open "space-frame," which will receive coloured canvas sails and abstract "mobiles" treated as an integral part of the steelwork design. Special attention has been given to the detailing of the joints between members, therefore, to eliminate the usual visible gusset plates, and for this reason the vertical members are composed of 4½-in. angles forming a box section, the gusset plates being concealed within the section. The horizontals are made of 3-in. tubes and the diagonals of 4-in. tubes, ending in flat plates at the joints, thus avoiding a heavy appearance where as many as ten different members meet at some points.

The Shot Tower

Fig. 2 shows the steelwork at the top of the Shot Tower, the purpose of which is to support the large radar "umbrella" (which will transmit messages to the moon), and underneath it the lighthouse. The design of this structure has involved the solution of several problems. First and foremost has been the question of visual shape, for it will be appreciated that this must be of some importance in the marrying together of such incompatibles as a nineteenth-century gun-shot factory, a lighthouse and a twentieth-century radar apparatus, one on top of the other! Second was the question of structural stability, to take not only the considerable vertical loads but also the effects of wind, both on the steel structure and on the objects themselves—and this supported on a brick structure which so far has expressed no surprise at this unexpected load. The third problem—and by no means the least—has been that of erection, for first in sequence must come the individual parts of the steelwork, which must be hauled up inside the tower; second, the gun mounting (seen at the top in the illustration) which will support the "umbrella," must be hauled up through the steelwork and placed in position on top of it; third, the lighthouse must be erected; and, lastly, the "umbrella" itself must be hoisted up outside the tower—all this taking place at some 180 ft. above ground and without the use of scaffolding.

The Bailey Bridge

We cannot leave the subject of steel without mentioning some of the bridge structures in which standard components have been used. The most dramatic of these is the Bailey bridge across the Thames, which will carry pedestrian traffic direct from the West End of London into the exhibition. This bridge is carried on piers formed of timber piles, and is of "triple-triple" type (i.e., three Bailey panels side by side and three in height), with a maximum clear span of 180 feet. The erection was treated as a training exercise for various regular and Territorial units of the Royal Engineers and the launching from south to north bank was carried out in three weeks—a considerable saving in time on the programme, which was of great benefit to the time schedule for the exhibition buildings. The "brows" connecting the river landing stages with the south bank are also composed of Bailey bridge units, these being of "triple-single" type (three panels side by side and one in height) spanning 130 feet. The pedestrian bridge across York Road between Waterloo Station and the exhibition site is made up of Callender-Hamilton bridging units, and the extension to the Hungerford footbridge—which will maintain an existing public right of way through the site at high level—makes use of military trestling for its supports.

The Use of Aluminium

We now come to the use of aluminium, and the most outstanding example of this is, of course, the great Dome of Discovery. This is unique both in size and type of structure. The dome is of 365 ft. diameter and rises 42 ft. from the eaves to the crown. Fig. 3 shows the structural system employed, which consists of main latticed ribs 2 ft. 10 in. deep forming a series of triangles varying in size and shape from the crown to the eaves, the largest being equilateral triangles with sides of about 60 ft. These main aluminium ribs rest on a steel ring girder of rectangular section—3 ft. wide and 4 ft. deep, large enough to enable a man to crawl right round to make an inspection, access panels being provided at intervals in the sheeting above. This

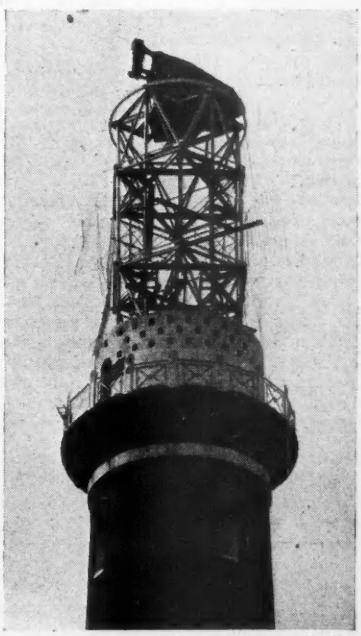


Fig. 2.—Steelwork at the top of the Shot Tower

ring girder rests in turn on the tubular steel latticed and hinged struts, which were described in the first article, and which take up the movements of the dome due to the effects of heat and wind. Between the main aluminium latticed ribs span secondary aluminium members of I section, 8 in. deep and 4½ in. wide, forming a series of smaller triangles, as the illustration shows. The whole is covered with 13 gauge aluminium sheets, the largest of which are 16 ft. by 5 ft. at the eaves, the length of the sheets decreasing towards the centre. All the structural aluminium is one of the standard alloys (such as AW 10B, AW 5, etc); rivets have been used in shop fabrication, and site connections have been made with bolts, except in the case of the roof sheets, which were "pop" riveted; the main joints between the latticed members were made with bright steel bolts, sheradised, in tight-fitting holes.

The erection of the steel ring girder started on April 19, 1950, and the first main latticed rib was begun on June 10—seven and a half weeks later. By August 1, all the main ribs were in place, after which followed the erection of the rafters. The first aluminium sheet was placed in position on August 27: by October 12 the last sheet over the roof proper was laid, and by November 12 the apron sheeting was complete. It had taken just under 18 weeks from the time the first aluminium member was started to the time the building itself was roofed in.

As a point of detail, it is interesting to note that six hose points have been provided on the exterior of the roof for cleaning purposes—three for detergent (if required) and three for fresh water.

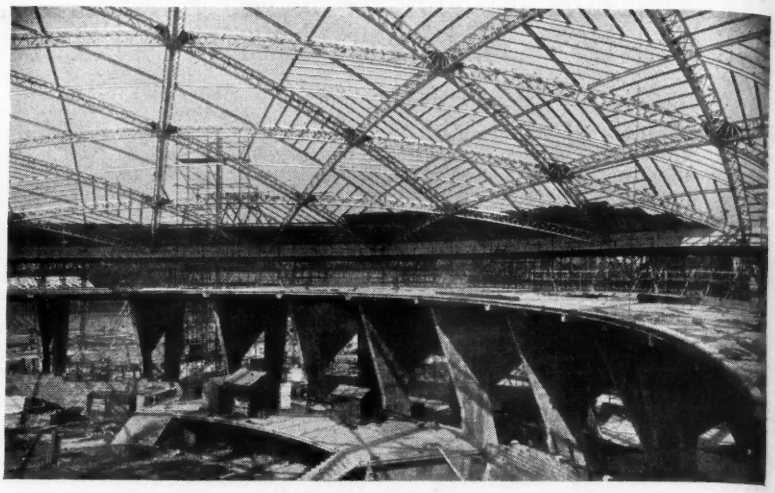


Fig. 3.—The roof of the Dome of Discovery under construction

The "Skylon"

The complementary structure to the Dome of Discovery is, of course, the "Skylon" vertical feature. A full description of this remarkable design must be held over until some later date, and it will suffice at this stage to note that the main "cigar" section is being constructed of aluminium. At the other end of the scale, mention must be made of the use of aluminium in wall cladding, which has been used in the Transport and Sea and Ships Pavilions. Another interesting example is the novel "wavy" roof of the Thameside Restaurant under Waterloo Bridge. This consists of a sandwich, 2 in. thick, of cork between two 18-gauge aluminium sheets, manufactured in the form of waves at right angles to the span of 30 ft., the pitch of the waves being 14 ft. furrow to furrow. The curved sandwich sheets are "stitched" together on site by rivets at 1½-in. centres—a method which sounds complicated, but, in practice, has proved comparatively easy. This wavy roof structure is sufficient, by reason of its shape, to meet the required span without any further members, and successfully passed pilot tests complying with the required loadings. This, then, is one of the infrequent cases where an entirely new form of light roof structure has been evolved suitable for exhibition buildings.

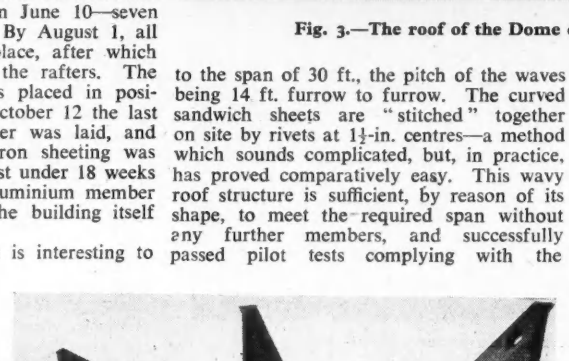


Fig. 4.—A modern Stonehenge—the supports to the 35-ft. high gallery in the Dome of Discovery

A 20th Century "Stonehenge"

The first example of the use of reinforced concrete, shown in Fig. 4, has been chosen for its dramatic Stonehenge-like quality rather than for any special structural interest, and it underlines the point, made in the first article, that the greater part of the constructional features are not out of the ordinary in a structural sense. These are the supports to the 35-ft. high gallery inside the dome, which were erected whilst the aluminium and steel work were being fabricated. On these rest the precast concrete beams forming the floor of the gallery. The finish of these concrete supports is as struck from the shuttering, as befits a large-scale building of this nature, in contrast to the finer finish of some of the examples which follow.

Fig. 5 shows the reinforced concrete canopy at the Chicheley-street main entrance to the exhibition. A photograph from one fixed viewpoint cannot do full justice to the conception of this design, for it is only as one passes underneath the canopy that the full dramatic force of the two wedge-shaped planes with paperlike edges can be appreciated. It can be seen, however, that the whole structure is supported on two columns, and that the planes themselves are reinforced by ribs on their upper side, which cannot be seen from below. The finish in this case is machine-like, the concrete being poured on steel shuttering, and the resulting precision is a tribute to craftsmanship in this material.

Fig. 5.—The canopy at the Chicheley-street main entrance

Post-Tensioned Construction

We now come to the only two examples of post-tensioned concrete construction in the exhibition, both using the Freyssinet method of tensioning. Fig. 6 shows the roof structure over the Fairway Restaurant, which is at one end of the decorative screen to York-road, described in the first article. This structure consists of precast concrete members 15 in. deep and 3½ in. wide, forming a grid of 7-ft. squares. The roof is 60 ft. by 50 ft. overall, and spans a clear area of 60 ft. by 40 ft. Each precast member forms one side of each square, the point where four members meet leaving a space which is filled with grout: thus, the grouted square joint is under equal pressure on all four sides. It is also of interest to note that the core for the tensioning wires left in each precast member dips up and down to meet the requirements of the structure at different points of the span and to miss the corresponding wires in the members which it meets at right angles. The whole structure is covered with steel decking and roofing felt. This example is noteworthy, then, in providing an economical reinforced concrete design for a roof over a large square area.

The Post-Tensioned Bridge

The other example of post-tensioned concrete construction, shown in Fig. 7, is the

footbridge which gives direct access to the Royal Festival Hall from the Waterloo-road entrance without passing through the exhibition grounds. Behind the story of this bridge, however, lies an interesting case of the time factor in operation during the progress of the exhibition construction, for at one stage its fate was in the balance. Although the design had been prepared over a year ago, it had not proved possible to commence erection until the autumn. This was due not only to the progress of the surrounding work, but also to the fact that, for structural reasons, not less than half the length of the bridge could be constructed at one time, and this brought the work into an adjoining contractor's area. It is intended in a later article to explain how the exhibition site came to be divided into areas occupied by different contractors, but for the present it suffices to say that in this case it was realised that the site for the other half of the bridge would not become available before this February—in fact a remarkably accurate estimate—and this introduced the uncertain weather factor of heavy frosts. With the opening date of May 4 in mind, there could be no possibility of pulling down the concrete and starting again if, in spite of all precautions, the frost were to attack the concrete, which necessarily had to be of good quality. A further complication arose in that access for large loads would have to be maintained under the bridge during construction in order to release other parts of the site for urgent work. A decision had to be taken, therefore, as to whether to play safe and redesign the bridge in steel, necessarily keeping to the same spans and silhouette, in spite of the delay which would be caused by this redesign and by the fabrication of steel, or whether to accept the element of risk and proceed according to plan.

The points in favour which led to the present decision were the fact that no more than an ordinary 1 : 2 : 4 mix of concrete was to be used, which allowed some margin in case of frost compared to a special mix; a careful assessment as to when the site for the second half of construction would be available; and the desirability on æsthetic grounds of keeping to a concrete material to harmonise with surrounding concrete and the stone facing of the Royal Festival Hall. The required clearance for access for the large loads, was achieved by reducing the depth of the scaffolding truss supporting the shuttering across the route and by excavating the access road to form a dip at this point. The photograph was taken, then, at a time when only the first half of the bridge comprising 1½ spans has been constructed, and shows the first span of 76 ft., but does not include the half of the second span to the right —a cantilever of 27 ft. 3 in., weighing 21½ tons. At the time of writing, construction of the second half is in progress. The silhouette of the bridge has been determined largely by visual considerations, and the need to accommodate the required number of cables: the span/depth ratio at mid-span is 43/1. As already mentioned, the mix used is the normal 1 : 2 : 4 with 1½-in. aggregate, and the concrete is vibrated not only to obtain the requisite strength, but also to get a clean finish against the steel shuttering.

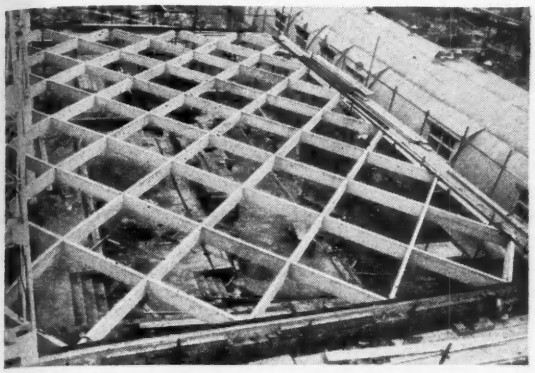


Fig. 6.—The roof structure of the Fairway Restaurant

In the background of Fig. 7 can be seen the reinforced concrete landing which forms part of the steps leading down from the Waterloo-road entrance. This, too, is another instance where the time factor has played a part in the decision as to which material was to be used. For the site had already been allocated to the River Wall contractor, who was prepared to waive his claim to it, however, provided he could be given possession again by March 31, 1950. There was no time to be lost, therefore, and as the requirements of public safety at a main entrance and exit prescribed incombustible materials, and as there was no time to wait for the fabrication of steel, it was decided to use reinforced concrete, in spite of its disadvantage when it comes to be demolished.

In the next article, mention will be made of the use of concrete as a wall-cladding and facing material, before turning to the remaining materials to be described.

[*To be continued. The first article, dealing with the use of steel, was given in our issue for January 12.*—ED.]

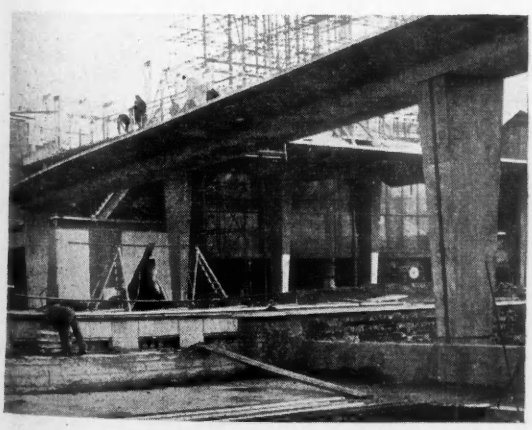


Fig. 7.—The footbridge to the Royal Festival Hall

SCHOOL ACCOMMODATION IN KENT

2,000 New Places in January

KENT Education Committee has now made available about 30,000 new primary and secondary school places in permanent and temporary accommodation throughout the county during the past five years. These have been required to cope with the increasing number of children of school age, to provide for the needs of new housing estates and to make good war-time damage to older buildings.

Accommodation for well over 2,000 additional children was brought into use for the first time in January. The new schools or adapted buildings which have opened their doors to their first scholars during that month are at:—

Chislehurst and Sidcup, Redhill county primary school, new buildings, accommodation for 400 pupils; Dartford, Wentworth county primary school, on the Heath Farm site, new buildings, accommodation for 320 pupils; Erith, Lessness Heath county primary school, new buildings, accommodation for 320 pupils; Ramsgate, Newington county primary school, new buildings, accommodation for 480 pupils; Rochester, Strood Elaine county primary school, new buildings, accommodation for 320 pupils.

At Erith, the Belmont county primary school, which was only partly being used, took more pupils in January.

At Ashford, the former Stanhope approved school is being adapted to make it suitable for primary school children. The first stage of this work has now been completed and about 120 pupils were admitted in January. At a later date, up to 280 children will be taught there. At Hythe, a mansion known as Brockhill is being adapted as a boys' secondary school.

Mr. Sidney Loweth, F.R.I.B.A., who is the County Architect, has in many cases worked in consultation with private architects on school projects.

OBITUARY

J. G. Noppen, F.S.A.

WE REGRET to record the death, at the age of 63, of Mr. John George Noppen, F.S.A., who had been a contributor to our columns for a number of years. Mr. Noppen's last article for *The Builder*, "Four King's Masters," was published, in two parts, as recently as January 19 and 26 this year. Mr. Noppen was a recognised authority on mediæval building, sculpture and painting.

Mr. Noppen was born at Wilmslow, Cheshire, in 1887, and educated at Wilmslow College and at private schools. He gained his knowledge of mediæval buildings and art by first-hand studies of Westminster Abbey and other historic buildings, and in art galleries and museums. In 1926 he published "Westminster Abbey and its Ancient Art," which was followed in 1927 by "A Guide to the Mediæval Art of Westminster." Before the Coronation of King George VI, in 1937, he published "Royal Westminster," in which he showed how the development of the Abbey and the Palace had been interdependent. Mr. Noppen also contributed articles to the *Daily Telegraph*, the *Burlington Magazine* and the *English Review*.

Mr. Noppen was a member of the Royal Archæological Institute, a Fellow of the Society of Antiquaries, and was on the committee of the Society for the Protection of Ancient Buildings.

R.I.B.A.

The President's Address to Students

AN address to students was given by MR. A. GRAHAM HENDERSON, A.R.S.A., President, on February 6. The President said:—

I have noted from their addresses that my predecessors as President found a certain amount of difficulty with the duty which I have to undertake to-night. They, no doubt, feared as I do that an address to students will be regarded as an occasion for giving advice. Personally, I am very loth to give advice, except, of course, in a professional capacity and for a suitable fee. I believe that other people, within limits, should be allowed to form their own judgments and even make their own mistakes on the principle that, if you stub your toes on a stone, you are far more likely to remember it is there than if I warned you about it.

Instead, therefore, of talking about current problems of training, of practice, or of design, all of which your teachers are much more competent to deal with than I am, I decided that it might be more interesting and certainly less dangerous to myself to compare briefly the conditions, both as regards training and practice, as they were when I joined the profession, with those of to-day. From this comparison it may be possible to assess the changes which have taken place, the losses and the gains, and to come to some conclusion as to how far we have progressed in the last 50 years.

It is just over 50 years since I became an apprentice. Those were the days when entry to the profession was *via* apprenticeship at a nominal salary or by payment of a premium, depending on the eminence of the architect who condescended to take you into his office. The junior apprentice was, in the fullest sense of the word, "junior," and his practical training included many tasks not included in your syllabus, such as attending to fires, running messages and generally acting as office boy. I was fortunate in being in a moderate-sized and busy office where apprentices were encouraged to take a measure of responsibility and given small jobs to see through on their own. Offices were, in fact, more numerous and smaller than to-day, due, no doubt, to the very much greater percentage of architects who were in private practice.

Magic Letters

The purely educational side was catered for by evening classes in building construction, history of architecture, drawing and design—good classes in themselves, but only vaguely related to one another and certainly without any comprehensive scheme such as is now provided by your great schools of architecture. The only thing we had in common with you was the objective. It was then, as now, to see the magic letters A.R.I.B.A. after our names.

I think I can say, without minimising the effort which you have to make, that ours was the harder way, for, not only did we have to pass the qualifying examinations (there were no exemptions then), but we had individually to organise our studies to that end. It must be admitted that comparatively few, particularly in the provinces, took the examinations, which, of course, were voluntary. Statutory registration is probably the greatest forward step taken by the profession since that date.

The greatest handicap we had was the lack of systematic instruction in design, instruction such as notable teacher-architects, such as Professor Reilly, gave at Liverpool or that given by Professor Eugene Bourdon, who came to Glasgow to be the first Head of the Glasgow School of Architecture. Bourdon, under whom I had the advantage of serving for a short time as an assistant teacher, was a product of the Beaux Arts and brought with him all the traditions and inspiration of that School.

Other schools of architecture were, of course, being founded at various centres, usually on the framework of existing technical and art classes and, in many cases, within the orbit of a university. These, for my generation, came just a little too late and we, lacking such guidance, tended to follow some leading architect's mannerisms in design or those of the latest winner of a competition. What we did have was a thorough knowledge of traditional styles and, in particular, of their appropriate detail. This was necessary, not only to pass our examinations, but as part of our stock-in-trade as draughtsmen.

Two Preoccupations

Apart from our daily office work we had (at least, those of us with any ambition had) two great preoccupations. These were draughtsmanship and competitions. We measured and we sketched and some of us formed a habit of sketching which persists to this day and has added in no small degree to our personal happiness. Many of the most accomplished draughtsmen in the profession emerged at this period and the Institute Measured Drawings Medal and the Pugin Studentship displayed the high standard of draughtsmanship attained. To many of my generation it is a somewhat saddening thought that improved methods of photography, much of which has developed into trick photography, has apparently discouraged drawing and, when drawing is still used to illustrate architecture, the objective is apparently to disguise rather than to explain it.

The first decade of this century gave great opportunities for competitive effort, and I need scarcely remind you that several of our most eminent architects—some of them, I am glad to say, still with us—owed their success initially to the competition system. Like every system, it has its drawbacks, but, on balance, I am convinced that these are far outweighed by its advantages both to the promoters and the profession. The promoters are practically assured of getting the best solution of their problem, while in the profession it encourages the highest standard of efficiency and effort. At the time I am speaking of, competitions, to some of us, were the equivalent of a course in design, with the added attraction of possible substantial professional success. If the carrot tended to elude the donkey it at least encouraged it on its journey. Speaking for myself, I can say that I enjoyed every one I entered for, and I think I can say, with complete conviction, that I learned a great deal from them and possibly more from the many I failed to win than from the few where I succeeded.

Of our practical training it is rather more difficult to generalise. It varied so much from office to office, depending on the type of work done and the degree of responsibility allowed. Being in direct touch with actual working drawings and with work in progress from our earliest entry to the profession was undoubtedly a great advantage. We absorbed the technical side of our profession almost subconsciously. We learned that the first essential of a working drawing was that the tradesman (not necessarily very intelligent) who was to build from it could understand it, and that there was a business side to architecture which the client, at least, considered to be of some importance. By the time we had passed our professional examinations I think that it would be fair to say that we were more fully qualified than the student of to-day who has completed a five-year course at a school of architecture with little or no office experience. We had a more evenly balanced, if less thorough, knowledge of certain aspects of our profession.

Practical Training

This subject of practical training, as you are aware, has been very closely studied with the result that in future candidates will not be able to qualify for the Associateship or for registration until they have had twelve months approved practical training subsequent to passing the Final Examination, or the equivalent examination, at one of the recognised schools and have passed an examination in professional practice and practical experience. I may add that in addition to what has already been decided the whole question is still under review.

One further difference as between my day and yours I feel I must mention. Then, one's loyalties were to the office in which one was trained. One's potential value in the market was often assessed in relation to the reputation of your employer. To-day, any such loyalties or reputation would be related to the school in which you were trained. This may not seem of much importance, but I think it led to rather important results for many of us, through the intimate knowledge which we got of our fellow assistants, of our employers and they of us. It often settled the problem of our future by way of junior partnerships in established firms or by associating with one or more of our contemporaries. Such partnerships were based on early friendships and full knowledge of one another's abilities and shortcomings, and tended to be more stable than those founded on casual acquaintance or hearsay reputation.

Some Comparisons

So far, I have dealt merely with the factual differences between our training and yours, but you may well ask: What about the work which we were doing in our offices? In so far as it had any pretensions to being architecture, what were the controlling factors in design and what comparison can be made with the work of to-day?

Fifty years is not a very long period of time, but few, if any, periods in human history have seen so many and so violent changes in social and economic conditions as have taken place in the first half of this century. In 1900, we did not know it, but we were approaching the end of an era. Social conditions were apparently stable, with only faint murmurings of unrest. Our international position seemed unchangeable. Abundant materials and cheap labour were available for building. There were no controls. As a country, we seemed set for a long period of prosperity. As architects, our future depended on our personal efforts, for, in a highly competitive market, we were paid what we could prove we were worth.

It would take far more time than I have to-night to analyse the architectural position. Tradition still dominated design, though there were some signs of revolt. Low building costs permitted the elaboration of detail which the client demanded as the outward symbol of his prosperity, or which the architect considered as essential evidence of his skill and knowledge. Our constructional methods were still traditional.

Under these conditions it required men of exceptional talent to produce works of any significance, work where function, proportion and detail were harmoniously related. It must be admitted that a large proportion of the work done was copy-book stuff, the quality of which you will no doubt have noted for yourself when walking down any street in any city.

Art To-day

What, in comparison, is the position of our art to-day? The social and economic conditions, particularly the latter, have completely changed. Scientific progress has changed our methods of construction. We have to construct with materials which are available and not with those we would like to use. We cannot afford elaborate detail. It follows inevitably, therefore, that architectural quality and the expression of this has to rely on new factors, or, rather, it should be said on basic factors which was evidenced in the best work of the past, but without the traditional trimmings which the past permitted or demanded. It is not necessary for me to catalogue these basic factors. They, no doubt, form the framework of the instruction given in your schools. That you are forced back on them by to-day's conditions is a challenge to your skill, which, in my view, will help, and not hinder, the future development of our art. All I would add is that, because you will be more or less forced to express yourselves in such basic forms, it does not mean that your work, as architecture, will be superior to the work of past generations, or that nothing is to be gained by study of the best work of the past. When I say this I do so not with any purpose of discouraging you from having that essential quality of confidence in yourself which must go with high endeavour if you are to achieve anything worthwhile.

This thought is well expressed in part of a foreword to a recently published book which deals with the literary activities of graduates of Glasgow University during the last 50 years. The foreword is by the Principal of the University, Sir Hector Hetherington, and, in quoting it, I have taken the liberty of substituting the words "architectural" for "literary" and "architect" for "writer." It reads:—

"It is a truth universally acknowledged that in every cycle of 40 or 50 years, a lively society must accomplish an architectural revolution. This is called a Revival or a Renaissance or an Aufklarung or a pre-Something or a post-Somebody or, if it be very recherché, a Geometrical Shape. It means that the architects of the current mode think poorly of their recent predecessors, and, despite the probabilities, take a more hopeful view of their own chances of survival. This is a just and wholesome attitude of mind. Nobody can invest his work with even a milligramme of meaning unless he believes that he speaks a new and authentic word to which posterity will lend an attentive ear."

Apartment buildings, Stuyvesant Town

LOW-COST HOUSING IN NEW YORK CITY

A Compact Community

IN New York City, along the East river and within sight of the permanent United Nations headquarters, is Stuyvesant Town, a compact community of modern apartment buildings occupied by 25,000 persons. The apartments were built by a U.S. insurance company as an investment and to provide low-cost housing for New Yorkers. Rents, fixed by agreement between the company and the City of New York, are within the income of the average wage-earner.

Stuyvesant Town covers an area of 18 city blocks formerly occupied by tenements and old industrial buildings. The project comprises 35 fireproof structures 12 and 13 storeys high. They contain 8,755 apartments, each with a kitchen, bathroom, living-room, and from one to three bedrooms. The buildings cover about a quarter of the area, the remainder being given over to lawns, gardens, playgrounds for children, adult recreation areas, and a centrally located park. Clearing of the site began in 1945; the project was completed in mid-1949.

Stuyvesant Town in the foreground

Research and Development in Public Offices

Discussion at Architectural Association

AT a meeting of the Architectural Association held at 36, Bedford-square, on January 31, the formal business was followed by a discussion on "Research and Development in Public Offices." The principal speakers were Mr. S. A. W. Johnson Marshall (Chief Architect, Ministry of Education) and Mr. Robert H. Matthew (Chief Architect, London County Council).

The president of the association (MR. S. E. T. CUSDIN, O.B.E.), who introduced the speakers to the meeting, said there had been a time when acceptable standards had been established through gradual evolution based on traditional methods. There was then sufficient money, labour and materials to build accordingly, but to-day our woeful lack of these commodities was the compelling force which made us reinvestigate our standards; and anything which would lead to economy was a matter of great importance.

MR. MATTHEW said that most of the larger public offices did a substantial volume of work, and many of them found it convenient and necessary to have a section of the staff studying research and development. His contribution to the present discussion was from the point of view of the L.C.C., a local authority serving a public of about 3½ million, with an annual capital building budget of £21,000,000. Of this £16,000,000 was devoted to housing and £3,000,000 to schools and educational buildings. The building needs of the L.C.C. far exceeded its resources in available labour and materials, and this led to a constant search for economy which had been intensified during the last few years. At the end of the war a few Government departments and local authorities had begun to appreciate the importance of linking up consumer and producer research, and to seek an architectural solution at a less cost in labour and materials. Taking the country as a whole, we were now in a stage of rather tentative experiment and *ad hoc* arrangements. The purpose of the development group of which he was himself a member was to study and define the planning problem and to lay down principles leading to a solution in the building programme. Fundamental research of any kind was outside the scope of the group: it largely used the work of others. It acted as a link between architect and building owner.

Who is the Client?

Defining the problem that any such group had to study, Mr. Matthew said that first it was necessary to find out what the client wanted, and in public work there was the added difficulty of finding out just who was the client. In his own case there was the Housing Ministry, from whom came general standards based on national needs. This client's demands represented a nice balance between national needs and total resources likely to be available. Its Housing Reports represented an attempt to keep in touch with the national demand, together with the study required to convert agreed standards into recognisable and practicable forms. A second client was the L.C.C. Housing Committee with its sub-committees. These represented to a certain degree client research on a local level. One sub-committee, concerned with living conditions, built up a wide range of experience in this direction, and the result of its deliberations, and those of other sub-committees, came to him (Mr. Matthew) in the form of an architect's brief from the department of the Director of Housing. This department was directly responsible for letting, management and maintenance, and issued the architect's brief on each fresh job. The task of the development group was to sort out the information from its multi-client; and it was important that it should have close working links with all three sources of information and also opportunities for regular discussion. There was a link with the research section of the General Planning Committee because considerable study had to be made of site planning and so forth before any new housing scheme came into existence.

The type of solution adopted for the first group of sites was the direct outcome of planning research. It was in the sphere of structure that the development group could make its greatest contribution, and structure and detailed planning must go closely together. The L.C.C. was now in a dilemma. It had carried through its programme on the basis of a series of published type plans covering all the houses and flats used in the schemes. A defect of this method was a tendency to continue to use approved types for reasons of expediency and speed; and this discouraged development. Further, the typed plans could hardly bear any close relation to particular forms of structural design, and with some plans a considerable amount of *ad hoc* uneconomic alteration became necessary. Plans should be flexible. There should be standardisation of contract documents and office methods. There should be revision of standard specifications, and standardised production of certain details for component parts such as windows. There should be a production team including a small number of architects, a structural engineer, a quantity surveyor and someone with a special knowledge of site planning and builder's plant.

Two Pitfalls

There were two pitfalls into which a development group might fall. First, it might become a central design group tackling building problems itself and leaving the production team to carry through jobs without being able to influence design. Where this was done the designers became back-room boys out of touch with the site, while other workers had no opportunity to use their creative function. The other danger was that the Research and Development Group might do little more than provide useful information sheets and thus become divorced from actual building. The work of the group should be based on actual building, and theoretical study should be quickly translated into part of the building programme.

New types of building plant should affect design, but it was only recently that architects had come to recognise any connection between the design of a building and type of plant, and facilities for such study were not easily obtained. When work went out to public tender the builder was unknown here at the design stage; but in America many of the largest projects started with client, architect and a selected contractor getting together to write a programme before the architect put a line on paper; thus many of the most successful and economical jobs were not the result of competition but of collaboration. We had something to learn there. The solution of a large range of problems associated with housing would take so long to work out that the main office would receive comparatively little light. A development group must impose a self-discipline time-table so as to avoid delay.

In the L.C.C. there were three separate research groups. Two of these were working on housing and schools and the third on planning. There was also a separate group working on bye-law revision. In early stages it was probably best for each group to work alone getting to grips with its special problem; but afterwards it should collaborate with other groups.

Research in Educational Building

MR. MARSHALL followed, saying that in the work of the Ministry of Education research served the field of educational building, in which field there were various types from small nursery schools to large colleges for further education. The endeavour was to make the work as comprehensive as possible. In research a particular aspect of building was taken and studied in isolation; and development was the application of these particular studies to a building problem. Take lighting, for example. In secondary modern schoolrooms this used to be designed for academic work. The teacher was at one end with the pupils facing him. The main natural light source was on the left and a secondary source on the right of the corridor. For artificial lighting there was a pendant from a ceiling twelve feet high. But educators tended now to introduce an increasing amount of informal study, which might perhaps be made by students sitting round a table. Thus extra accommodation became necessary and added to the size and cost of the building. To leave some classrooms to be used for perhaps not much more than half a day was bad economically, and so rooms should be designed equally applicable for formal teaching and for light practical work. For this work pupils would face in any direction and so, if possible, lighting sources should be in more than one wall. If this could be achieved, the ceiling could be lowered to nine feet, but this imposed a new and difficult artificial lighting problem, because fittings could not hang down very far. Therefore a different approach to artificial lighting become essential and therein was new material for research.

Thus things went on between research, development and assimilation into practice of the results of this process. Each year the nation had to complete 450 schools. We found ourselves short of time, money and men, and it became the task of the architectural profession to devise different ways in which to build so as to overcome the difficulty. At the moment we were slipping. There were not enough men to man the jobs, and the jobs became too long because they were too large. Material conditions were always changing and so were educational needs, and the rate of change determined the scale of development. It was easy to spend five years perfecting a job of work only to find at the end that the factors governing design had changed so much that it was time to start again from the beginning. The people responsible for development were called the Development Group. They were mostly architects but included a senior educationist and a senior administrator to represent the client's interests in

amenity and money. The group also included a quantity surveyor whose main task was cost analysis.

Some Essential Requirements

There were one or two essential requirements, among these that the group must be small and the calibre of each member high. There was no clear division between what was technical in the educational sense and in the architectural one. Members of the group must not operate as narrow specialists: each must have a thorough understanding of the subjects of the other members. To achieve this, the group must work together on similar problems for a long time, they must assume a common attitude towards their work and have a sustained enthusiasm. Two factors were of paramount importance. One of these was the changing educational need and the other the available men, money and materials. These two factors interacted and must be considered simultaneously. He had given lighting as an example of planning development, he could give many more examples embracing the design of the whole school. Take the assembly hall of a primary school. In 1947 most architects built this room as a limb of the building, and its character was suitable for solemn occasions. By 1950 it had been brought into the centre of the building with classrooms round it, but still it echoed the character of a temple. To-day the educator said he wanted a room in which a gracious ceremony could be conducted, but also where children could climb, swing, dance, etc. This introduced apparatus and equipment, but this might be in one end of the room while the other end retained its original solemn character.

If time and quantity dictated the development of new building technique, educational requirements dictated that such development must admit an infinite variety of planning of sectional forms. If we could not obtain labour on the site we must shift the work to where it was available, i.e., the factory; and to make the best use of factory production we must standardise. Standardised components should be small and capable of assembly in a wide variety of ways. In designing them the architect worked with the engineer, but the best results were obtained when both skills were possessed by one man, and that man operated at director level, because it was almost impossible to divorce design at this stage from policy and price.

An Authoritative Programme

In such work the preparatory design work, trial assemblies and tests were expensive. If development was to be realistic the prototype building must be part of an authoritative programme, and subject to the discipline of time and money thus implied it must also be linked to production. The Development Group should have a broad charter: it must not be hamstrung by detailed specifications drawn up before the project was started. Specifications should not be written until the design was complete. Each form of organisation should handle work at partner or director level. The scale of the development unit should be small: if there was an element of genius in it that must not be organised out of existence. The architect should possess an attitude of mind normal in the conditions of the day. He should be a skilful designer, have lots of common sense and be enthusiastic. It was to be hoped that numerous small development groups would be created, not two or three very large ones. The work of the small groups should be correlated.

Points from Discussion

MR. R. FITZMAURICE said that one of the weaknesses of the building industry was that there was not enough work published giving the results of studies in research. Almost the only publications were those of the B.R.S. and a few large industrial concerns. There should be more publication, discussion and interchange of detailed knowledge of the actual research that went on. If an engineer built a bridge his calculations, etc., were all set out in technical works for the benefit of his brother engineers; and something of that kind should be done in the building industry. Another point was that operational research was necessary: if you were erecting a building you should adopt just sufficient control whilst you were doing the job to enable you to get some knowledge of the factors that went into its production.

MR. MATTHEW said that in the building industry self discipline would imply discipline of the contractor, and it was the contractual side of experiment which was most difficult to work out.

MR. OVE ARUP said that new techniques required large buildings and time to prepare. The normal building contract was small, and the client waiting. The present situation was unique in building history because there were large problems of housing and new technical development suitable for dealing with the situation.

MR. NENK said that local authorities got no more guarantee than one year's building programme, whereas to take advantage of research and factory development a three-years' guaranteed production would be essential.

MR. BRUCE MARTIN said that operational research required careful analysis of a particular job as you went along. The Ministry of Works had carried out some of this research in the early days of post-war housing to find out whether traditional methods of building were better than new ones. More might be done in keeping careful records of actual jobs. The information gained could be sent to a central office to be there analysed and sent out to architects in general.

MR. WILLIAM ALLEN said that in his opinion Bulletin number two, dealing with the planning of secondary schools, was a sustained piece of scientific analysis.

MR. MARSHALL, replying to some of the points raised, said that his department had to publish the results of their work, and had already published some on the early stages of development. He did not see why development should be restricted to large public offices.

CARLTON HOUSE TERRACE

Council Urge Examination of Rebuilding Scheme by R.F.A.C.

WESTMINSTER City Council, at its meeting last week, decided to ask the Government to submit the whole scheme for the rebuilding of Carlton House-terrace, including the proposed ramp in Waterloo-place, to the Royal Fine Art Commission, and to publish the Commission's observations, before finally approving any designs. The Council added an amendment to the recommendations of its town planning committee that the Government should also be asked to exhibit a model of the new buildings, which are to provide accommodation for the Foreign Office, and which it is proposed to construct in the form of two large blocks on the south side of the terrace, extending on each side of the Duke of York monument westward to Carlton-gardens and eastward to the Old County Hall.

Mr. E. H. Keeling, M.P., expressed strong disagreement with the view that this battle in the cause of good architecture could be regarded as lost. Apart from what Westminster Council was doing, the House of Commons had not had its last word on the subject, especially after it had been misled by being told that the north façade would be retained.

The amendment was moved by Mr. Keeling and seconded by Mrs. Hughes and it and the recommendation of the town planning committee were carried unanimously.

The Architect's View

WRITING to *The Times* on Monday, Mr. Kenneth Peacock and Mr. David Hodges, partners of Mr. Louis de Soissons, A.R.A. (who is now abroad), state: "In our view it is deplorable that so little trouble has been taken to ascertain the true facts of the case before presenting them to the public. We are in entire agreement with the decision to retain the façades in their present form and to give them a useful purpose in forming part of a building to serve the needs of a new Foreign Office. Mr. de Soissons has taken the greatest care to ensure that the new work shall harmonise with the old and that the completed building should retain the essential character of Nash's work. . . . The new portion of the building which will be constructed along Carlton Gardens does not extend the whole length of this front, and will rise only 14 ft. above the present level of the parapet of the end pavilions and of the existing Carlton Gardens elevation. We cannot agree that this will in any way destroy the scale either of the existing buildings or of the surroundings in Carlton Gardens. With regard to the Mall side, it should be understood that the top of this extension will begin to be visible only from the middle of the Mall, since it is set back some 80 ft. from the present façade, to which no extra height is in fact added. Slightly more than one storey will be seen from a point as far away as the corner of the Admiralty Citadel. . . .

"It is our opinion that this new extension will not destroy the scale of the terrace, but will in fact unify the building. In our view, the existing skyline, about which there has been so much anxiety, is of very doubtful value, and we cannot believe that those anxious to retain it at all costs can have really studied its present outline with any care. . . . Many of the critics of the scheme appear to be unaware of the fact that this scheme was approved by the Commission of Crown Lands and by the Royal Fine Art Commission in September, 1948, with certain recommendations subsequently incorporated which are shown on the perspective. These include modifications of the tops of the new projections above the Mall Terrace and the retention of the existing central pediments until the new building is nearly completed, when it will be decided, in consultation with the Royal Fine Art Commission, whether they ought to be removed."

ESSEX, CAMBS AND HERTS ARCHITECTS

Changes in Patronage Discussed

THE ANNUAL DINNER of the Essex, Cambridge and Hertfordshire Society of Architects was held on Friday, January 26 at the City Livery Club, London, when 150 members and guests who attended were received by the Society's president, Mr. David A. Wilkie, F.R.I.B.A., and Mrs. Wilkie.

Proposing the toast to the Patrons of Architecture, the Dean of St. Albans outlined the history of architectural patronage, making reference to St. Albans Abbey down to the recent programme of school building in Hertfordshire and the Royal Festival Hall in London, and asked that men should build with a faith—a spiritual faith. Replying, the chairman of the London County Council, Mr. J. W. Bowen, said that patronage was no longer in the hands of the Church and big landowners and that now the State was proud to be the custodian of the nation's treasures and its homes.

In proposing the toast to the Society, Mr. Martin S. Briggs, hon. secretary of the R.I.B.A., who was deputising for Mr. Frederick Gibberd, V.P.R.I.B.A., gave an appreciation of the work of the Essex, Cambridge and Hertfordshire Society, especially among students, and in its help given to the Architects' Benevolent Society.

COMPETITIONS OPEN

SEASIDE HOTEL, CRAIGAVAD, CO. DOWN.—Promoted by the Festival of Britain (Northern Ireland Committee). Premiums: £200, £100 and £50. Assessor: Mr. Desmond Fitzgerald, B.Arch., A.R.I.B.A., F.R.I.A.I. Conditions from: The Hon. Secretary, Royal Society of Ulster Architects, 7, College-square North, Belfast. Dep. £1 1s. Closing date for designs: March 31, 1951. *December* 22, 1950.

RECREATION CENTRE, ENNISKILLEN.—Promoted by the Festival of Britain (Northern Ireland Committee). Premiums: £100, £50 and £25. Assessor: Mr. Desmond Fitzgerald, B.Arch., A.R.I.B.A., F.R.I.A.I. Conditions from: The Hon. Secretary, Royal Society of Ulster Architects, 7, College-square North, Belfast. Dep. £1 1s. Closing date for designs: March 31, 1951. *December* 22, 1950.

FESTIVAL HALL, HESWALL, WIRRAL. Promoted by Wirral U.D.C. Premiums: £500, £350 and £250. Assessors: Mr. P. Garland Fairhurst, M.A., F.R.I.B.A. Conditions from: Mr. W. F. Roberts, Clerk of the Council, Council Offices, Heswall, Wirral, Cheshire. Dep. £2 2s. Closing date for designs: April 28, 1951. *January* 12 *and* 26, 1951.

COVENTRY CATHEDRAL. Promoted by Coventry Cathedral Reconstruction Committee. Premiums: £2,000, £1,500 and £1,000. Assessors: Sir Percy Thomas, P-P.R.I.B.A.; Mr. Edward Maufe, R.A.; and Mr. Howard Robertson, A.R.A. Conditions from: The Secretary, Coventry Cathedral Reconstruction Committee, 22, Bayley-lane, Coventry. Dep. £2 2s. Closing date for designs: July 2, 1951. *November* 3, 1950.

MARINE AND TECHNICAL COLLEGE BUILDINGS, SOUTH SHIELDS. Promoted by South Shields County Borough. Premiums: £500, £250 and £100. Assessor: Mr. S. W. Milburn, M.B.E., F.R.I.B.A. Conditions from: Mr. Harold Ayrey, Town Clerk, Town Hall, South Shields. Dep. £2 2s. Last day for questions: March 21. Closing date for designs: July 21. *January* 19, 1951.

Dates in italics at the end of paragraph refer to issues of "The Builder" in which details of the competitions appeared.

Lecturers on Legal Subjects

The Glanvil Society has recently been formed by a number of practising barristers-at-law for the purpose of providing a panel of lecturers and writers on legal and allied topics. Details may be obtained from the hon. secretary, Mr. Brian Calwell, at 3-14 Canfield-gardens, N.W.6.

HOUSING PROGRESS FIGURES FOR 1950

THE Housing Progress Reports presented to Parliament on February 1 as white papers* by the Minister of Local Government and Planning and the Secretary of State for Scotland show that the number of permanent houses completed in Great Britain during December was 15,950 compared with 17,453 in November and 17,603 in October. This brings the number of permanent houses completed during 1950 to 198,171 (compared with 197,627 in 1949) made up as follows :—

January, 14,356 ; February, 14,069 ; March, 19,385 ; April, 14,862 ; May, 17,030 ; June, 18,107 ; July, 17,013 ; August, 14,945 ; September, 17,398 ; October, 17,603 ; November, 17,453 ; December, 15,950.

The total number of houses completed under the post-war programme is now 978,664 (821,518 permanent, and 157,146 temporary).

During December homes were provided by new building, repair of uninhabitable houses and conversion for 16,749 families, compared with 18,285 in November and 18,563 in October. This brings the total number of families rehoused by these methods under the post-war programme to 1,260,947, excluding homes provided in Service camps or requisitioned properties.

Detailed figures at the end of December were :—

PERMANENT HOUSES AND FLATS COMPLETED

	Great Britain			England and Wales		
	Total to Dec. 31, 1950	*Completions in December*	*Completions in November*	*Total to Dec. 31, 1950*	*Completions in December*	*Completions in November*
Local Authorities †	635,095	13,011	14,755	551,822	10,706	12,965
Private Builders	125,372	1,724	1,994	120,148	1,603	1,954
Housing Associations ...	5,846	117	83	5,649	79	83
Government Departments ...	13,223	958	462	11,995	758	442
War Destroyed Houses Rebuilt—						
(1) Local Authorities ...	9,178	11	18	8,398	11	3
(2) Under Licence ...	32,804	129	141	32,609	121	141
Total	821,518	15,950	17,453	730,621	13,278	15,588

PERMANENT HOUSES AND FLATS UNDER CONSTRUCTION

	Great Britain			England and Wales		
	Under construction at Dec. 31	*Increase or decrease on Sept. 30*	*September increase or decrease on June 30*	*Under construction at Dec. 31*	*Increase or decrease on Sept. 30*	*September increase or decrease on June 30*
Local Authorities †	174,396	– 1,460	6,489	14,302	– 78	5,106
Private Builders	15,083	– 2,014	– 2,425	13,833	– 2,116	– 2,398
Housing Associations ...	1,688	150	50	1,403	162	– 32
Government Departments ...	8,481	779	1,246	7,342	740	1,048
War Destroyed Houses Rebuilt—						
(1) Local Authorities ...	76	– 36	6	66	– 21	12
(2) Under Licence	1,684	– 225	– 320	1,466	– 219	– 314
Total	201,408	– 2,806	5,046	169,412	– 1,532	3,422

Housing Labour Force

It is estimated that at the end of December, 1950, there were 223,100 men employed on the construction of permanent houses and preparation of housing sites in Great Britain. This figure does not include the number of men directly employed by local authorities.

SUMMARY OF HOUSING PROGRESS REPORTS

	England and Wales		Scotland		Great Britain	
	Dec. 31	*Sept. 30*	*Dec. 31*	*Sept. 30*	*Dec. 31*	*Sept. 30*
Completed Houses and Flats						
Permanent	730,621	686,394	90,897	84,118	821,518	770,512
Temporary	124,970	124,970	32,176	32,176	157,146	157,146
Total	855,591	811,364	123,073	116,294	978,664	927,658
Under Construction						
Permanent	169,412	170,944	31,996	33,270	201,408	204,214
Tenders Approved (*a*) (Local Authority new houses) ...	751,811	709,453	120,968	116,073	872,779	825,526
Licences and approvals issued (*a*) (Private Builders new houses)	140,091	135,439	7,234	6,819	147,325	142,258
Tenders Approved and Licences issued (*a*) (New houses all agencies including rebuilt houses) ...	966,235	915,553	132,750	127,115	1,098,985	1,042,668
Additional homes provided (*b*)...	1,132,055	1,085,317	128,892	122,033	1,260,947	1,207,350

(*a*) Includes dwellings under construction and completed.
(*b*) Excludes homes provided in Service camps or requisitioned properties.

* Cmd. 8138 Housing Return for England and Wales, December 31, 1950, H.M. Stationery Office, price 9d., post-free 10d.

* Cmd. 8139 Housing Return for Scotland, December 31, 1950, H.M. Stationery Office, price 6d., post-free 7d.

† In Scotland includes houses built or being built by Scottish Special Housing Associations.

IN PARLIAMENT

Westminster Hospital Site

ON January 31, in the House of Lords, LORD MOTTISTONE called attention to the recent expression of public opinion in favour of retaining, as an open space, the site of the old Westminster Hospital. He asked if the Government would consider erecting the new Colonial Office on some other site unless, by replanning, the frontage could be set back to accord with the strong representations of the Royal Fine Art Commission. He said that it was only when the old Westminster Hospital vanished that it was realized what possibilities would be lost for ever if full advantage was not taken of the situation. The model of the new Colonial Office showed that it would bulk forward and ruin what could be a seemly layout. The model indicated how deplorable would be the projection of the new building on that historic spot. When he looked at the plans and saw the model he realised that there could be only a small setting-back on the all-important south front. If the area of land that the Government had already agreed to surrender was applied, with a bit added for good measure, to the setting-back of the south front, the Colonial Office would get all it needed and they would have a dignified square.

If the Colonial Office needed more room than could be found by a more modest use of the Westminster Hospital site, they should turn their eyes to those areas not too far distant where the demolition of obsolete or derelict buildings and their replacement with a fine new Government building would be a benefaction.

In the debate which followed, many peers, including the Archbishop of York and Lord Halifax, urged the Government to reconsider the matter. LORD SILKIN, a former Minister of Town and Country Planning, said that some Labour peers felt equally strongly about the desirability of preserving the beauty of this most historic site in Westminster. He recognised that an Act of Parliament was passed for the purpose of acquiring the site. He and others who had some responsibility for the selection of this site would certainly have been impressed by the views now put forward. The fact that representations were not made at that time was something for which they must all accept some responsibility, and it was no discredit to any one of them to say that their æsthetic sense had improved since 1947. If it were not too late he would appeal to the Minister of Works to think again. It might be that the rearmament programme would cause some delay.

LORD MORRISON, Parliamentary Secretary, Ministry of Works: On that point I would say that if it had not been for the discussion which arose in the last few weeks the Minister, within the last 10 days, would have called for tenders for the excavations. The appropriate time to make recommendations for the replanning or re-siting of the new Colonial Office would have been in 1947 when the Bill was before the House. Moreover, having been authorised to acquire the site for that purpose, the Minister of Works would require further legislation if it were decided to use it entirely as an open space. The Government at present had no suitable alternative site in view. To change the site at the present late stage would mean the complete replanning of the project and involve years of delay. In view of wide public concern, the Government were now giving close consideration to the matter. He could not give any hope at all that they would look favourably on the idea of abandoning the site altogether. Questions of height, frontage and accommodation were at present under active consideration, and as soon as the Government arrived at a decision it would be announced.

Housing Staffs

On February 1 in the House of Commons, BRIGADIER PRIOR-PALMER asked the Minister of Local Government and Planning to what extent the permanent staff, who had heretofore dealt with housing matters, would continue to do so and be transferred to his department; and whether their salaries would be unaltered.

MR. DALTON said that for the time being, until the details of the merger were worked out, this staff would continue to do so. Salary scales were not affected.

South Bank Exhibition

In the House of Commons on January 29, MR. MARPLES (U., Wallasey) asked the Lord President of the Council whether he would arrange for the erection in the Festival of Britain grounds of a private enterprise house built to the standards of the National Housebuilders Registration Council.

The Lord President of the Council (MR. HERBERT MORRISON): I assume the question refers to the South Bank Exhibition. I am not quite sure what the hon. member has in mind, but in any case it would be quite impracticable to make any substantial alteration in the exhibition at this late stage.

Copper Roofed Houses

MR. TURTON asked the Minister of Works, on January 30, how many houses had been or were being built by his department with sheet copper roofs at Hawkhills, near Easingwold; what was the average total cost of these houses; and what part of the total cost was attributable to the sheet copper roofs. MR. STOKES replied that six houses had been built with sheet copper roofs at Hawkhills, near Easingwold. Four similar houses were in course of erection there. The average total cost per house was £1,645. The cost of sheet copper roofing was estimated at £52 per house.

Rebuilding Damaged Cinemas

MR. G. P. STEVENS asked the Minister of Works, on January 30, how many licences for rebuilding damaged cinemas were issued by his department during 1946 and 1947; and what was the aggregate value of these licences for each of these two years. MR. STOKES: So far as records, which are not quite complete, show, only one licence was issued in these two years to rebuild a war destroyed cinema at a cost of £20,000.

Building Materials and Incentives

MR. MURRAY asked the Minister of Works, on January 30, what estimate he had made of the increased requirements of the building industry for building materials on the introduction of incentive payments under the new bonus scheme on a national basis; and how far he estimated that these materials would be available. MR. STOKES said it was impossible to forecast precisely the effect of the new incentive payments scheme, but he had called for a production from the principal building materials industries, for which he was responsible, that would provide for a substantial increase in requirements.

Appeals Under Planning Act

On January 30, MR. WALKER-SMITH asked the Minister of Local Government and Planning on what principles he exercised his power to award costs to successful appellants in appeals under the Town and Country Planning Act, 1947.

MR. DALTON said that costs were only awarded in exceptional cases, when it appeared to him that the local planning authority had acted unreasonably.

New Town Populations

On January 30, MR. BLACK asked the Minister of Local Government and Planning what was the estimated ultimate population in each of the new towns; the number of sites reserved in each for the erection of places of worship; and the method of allocating the sites among the various religious communities.

MR. DALTON said that the population proposed for Stevenage, Harlow, and Hemel Hempstead was, in each case, 60,000; for Crawley and Basildon, 50,000; for Corby, 40,000; for Welwyn Garden City, 36,500; for Cwmbran, 35,000; for Peterlee, 30,000; for Hatfield and Bracknell, 25,000 each; and for Aycliffe, 10,000. Some of these figures, however, might be increased.

The information asked for in the second part of the question was not available. In reply to the third part, the practice of Development Corporations was to keep in touch with the local Churches Joint Committees and to allocate sites for churches and church buildings after consultation with them.

Defects of Planning Act

In the House of Commons (January 30), MR. BLACK asked the Minister of Local Government and Planning whether he had considered the memorandum, of which a copy had been sent him, issued by the Royal Institution of Chartered Surveyors and entitled "Defects of the Town and Country Planning Act and the Remedies"; and what action he proposed to take.

MR. DALTON: I have already adopted some of the suggestions in this memorandum, and am considering the others.

OVERSEAS SCHOLARSHIPS IN 1951-52

Fifteen Foreign Countries offer facilities to British Students

THE BRITISH COUNCIL has published a handbook giving details of some 70 scholarships offered by 15 foreign governments and universities to British students for the academic year, 1951-52. The scholarships in most cases correspond to those offered by the British Council to these countries.

Although mainly for postgraduate study, some scholarships are open to those not yet graduated and to those with non-academic professional qualifications. They include free tuition and maintenance.

The countries offering scholarships are Austria, Belgium, Brazil, Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Persia, Portugal, Spain, Sweden and Switzerland.

HOUSING IMPROVEMENTS

Practice Notes for Local Authorities and Others

AS briefly announced in *The Builder* of January 26, the Ministry of Health have issued (Circular 4/51) Practice Notes on the subject of housing improvement subsidies. These have been prepared in the light of experience gained since the enactment of the relevant provisions of the Housing Act, 1949. The rates are for guidance in dealing with individual applications, and do not obviate the need for complying with the conditions laid down in the Act or with the earlier circular on the matter. Following is the full text of the circular:—

A. General.

1. *Meaning of "Improvement of Dwellings."* Experience of the working of the Housing Act has shown that there is considerable misapprehension as to what constitutes "improvement of dwellings" (i.e., improvement works other than the provision of dwellings by conversion).

The Act was designed to assist the carrying out of any works, other than works of ordinary repair and maintenance, which add to a house which is of sound construction and in good repair, amenities and conveniences which are normally provided in a house of modern construction and which have come to be regarded as necessary for a pleasant and healthy life. That a property is old is no bar to an application for grant so long as the standards of fitness mentioned in Appendix III of Circular 90/49 are complied with. In the matter of planning, the aim should be as high a standard as reasonably practicable having regard to the arrangements of the existing dwelling and cost.

2. *Examples of works within the scope of the Act.* (a) The provision of bathrooms where none exists at present and indoor sanitation; (b) The provision of additional bedroom or living-room accommodation.

The provision of the additional accommodation must be reasonably necessary to meet the requirements of the family occupying the house after the works are completed, e.g., to relieve overcrowding or to allow for the proper segregation of the sexes. Additional bedroom accommodation built over other approved improvement works, e.g., a scullery or bathroom (but not a garage) may be allowed irrespective of size of family.

(c) Conversion from cesspool to main drainage; provision of septic tank; privy conversion, etc. Where a local authority contribute towards the cost of privy conversion under Section 47 of the Public Health Act, 1936, that contribution should be deducted from the expenses of carrying out the improvement works in the calculation of improvement grant. The enlargement of a cesspool cannot be regarded as improvement work unless it is necessary to take additional drainage from new baths, w.c.s, sinks, etc. The possibility of connecting to main drainage should be investigated before enlargement of an existing cesspool or the provision of a new septic tank is approved for grant.

(d) Internal servicing for water, gas or electricity. The cost of installing water, gas or electricity in a house should only be admitted where a mains supply is either already available or there is definite information that it will be available in the very near future or in connection with a new private source of supply. It should be noted that subsection 3 (c) of Section 20 precludes any grant in respect of works carried out on land not owned by the applicant or held by him on a lease with not less than 30 years to run.

(e) Works necessary to eliminate inherent structural defects. These include, e.g., the provision of a damp-proof course where this is the only effective remedy against rising dampness; excavation around the building; new ground floors where the existing floors consist only of rammed earth, bricks or stone flags, etc.; the raising of the levels of ceilings, the lowering of the levels of floors and, if necessary, works in connection with the raising of the level of the roof to achieve a minimum height of 7 ft. from floor to ceiling for habitable rooms (see paragraph 3 (vii)); a new staircase where the existing staircase is entirely inadequate as a staircase or its removal and replacement is necessary on account of a desirable replanning of the dwelling as part of the proposed improvement.

(f) The installation of a hot water system, domestic washing facilities, including a sink and washboiler. The heating appliances should be of the types in the approved list issued as a Supplement to Circular 170/48.

(g) The provision of new windows. The cost of providing new windows may be admitted where required as part of the improvement work, e.g., to a new bathroom, bedroom, larder, etc., or to increase the window size for compliance with bye-law requirements but not otherwise.

(h) The rebuilding of ground-storey walling to take first-floor additions. Grant may be paid in respect of the rebuilding of single-storey back addition where necessary for the carrying out of works of improvement over it.

(i) The provision of a well-ventilated larder and storage cupboard accommodation. Larder and cupboard accommodation allowed as part of the proposed improvement work should not exceed the standards laid down in the Housing Manual.

(j) All works connected with the conversion of non-residential buildings into dwellings. In the case of the conversion into a dwelling or dwellings of buildings other than houses, all the works necessary for improvement, repair, maintenance and replacement may rank for assistance.

(k) The provision of access paths. The provision of a proper surfaced path from a house to the domestic outbuildings and the paving of small areas at the rear of buildings constitute improvement works. Where a house is situated some distance from the nearest road or highway, the reasonable cost of a path (on land owned by the applicant or held by him on a lease with not less than 30 years to run) from the house to the road but not the provision of a surfaced road to accommodate vehicles, would similarly rank for assistance.

(l) New wells. The provision of a new well is a proper subject for grant whether or not there was previously a well in existence on the property.

3. *Works not within the scope of the Act.* (i) Works which have been commenced or completed by a local authority before the Minister's approval for the purposes of Section 15 of the Act has been obtained; (ii) Works which have been commenced by a private owner prior to obtaining the formal approval of the local authority under Section 20 of the Act; (iii) Works to "Tied" houses ("service accommodation").

If assistance is given, a proper tenancy must be created which will give to the tenant the full protection of the Rent Restrictions Acts against summary eviction in the event of the employment terminating. In the case of a house owned by a local authority the house must be included in the Housing Revenue Account and form part of the pool of accommodation available for meeting the general needs of the district (Second Schedule to the Act, paragraph 5).

(iv) Works to houses erected with aid of subsidy, notwithstanding the fact that the subsidy may have ceased to be payable; (v) Works to houses erected since 1945; (vi) The reconstruction or conversion of houses or other buildings of which only ruins or remnants of walls remain, or works consequent on war damage or damage by fire; (vii) Works to houses, the habitable rooms of which are below 7 ft. in height and cannot be brought up to this height. An exception may be made in the case of a house of special historic or architectural merit, or where there are exceptional compensating features to offset this defect; (viii) Works to houses in which bedrooms would still be inadequately ventilated owing to the relative positions of doors, windows and flues.

(ix) The widening or cleaning out of an existing wall; (x) The provision on land not owned by the applicant or held by him on a lease with not less than 30 years to run of connections to water, gas or electricity mains or sewers.

(xi) The enlargement or repair of cesspools (see also paragraph 2(c)); (xii) Replacements (including the reinstatement of any existing fittings and equipment, cookers, sinks and drainers, fireplaces, etc.), *not* necessitated by replanning consequent upon the improvement works; (xiii) Works carried out to that part of a dwelling which is used for business purposes; (xiv) Tiling of walls of bathrooms, kitchens or sculleries, or any other works or fittings in excess of a reasonable standard; (xv) Works to houses converted into flats with a common staircase and entrance, where the flats will not be entirely self-contained; (xvi) Works to dwellings which will not be entirely self-contained; (xvii) Works to dwellings where any part of the external walls will not be weather-proof, e.g., 4½-in. brick; (xviii) The improvement of "hostels"; (xix) Works to almshouses, unless after the execution of the works they will be separate dwellings fully complying with the requirements of paragraph 9 of Appendix II to the circular.

(xx) The conversion of dwellings in relation to which conditions contained in the Housing (Rural Workers) Acts, 1926 to 1942, for the time being apply (see Section 28 (i) of the Housing Act, 1949).

4. *Planning.* The standard of planning should be as high as practicable. In particular, there should normally be separate access to each bedroom from a hall, lobby or living-room, as the case may be, and the bathroom and/or w.c. should not be so

placed that the only access to it is from a bedroom.

Improvements and Repairs

5. (*a*) *Improvement works and ordinary repairs not incidental to the improvement works together costing less than* £600. Where an application shows that major works of ordinary repair not incidental to the improvement works are necessary and the dwelling could not possibly be regarded as complying with the requirements of paragraph 9 of Appendix III until those works have been carried out, it should not be approved unless those works are carried out.

Since it will often be more convenient from every point of view for the works of improvement and the ordinary repairs to be included in one contract, an informal promise of an improvement grant may be given conditional upon the carrying out of the specified works of ordinary repair. The actual approval under Section 20 of the Act should be given as soon as the local authority are satisfied that these works have been or will be carried out, e.g., by inspection of the contract. The cost of the repairs will, of course, be excluded in assessing the grant.

(*b*) *Improvement works and ordinary repairs not incidental to the improvement works together costing more than* £600. (i) Where the ordinary repairs account for the whole of the excess over £600 and the local authority are reasonably satisfied that, without those repairs, the dwelling will conform with the specified requirements after the improvement works have been carried out, the application may be approved, but the cost of the repairs must, of course, be excluded from grant.

(ii) Where, however, the excess over £600 is due wholly or in part to the ordinary repairs and the dwelling will not conform with the specified requirements unless those repairs are carried out, the application cannot be entertained since the £600 maximum would be exceeded.

6. *Grouped Schemes.* It is essential in grouped schemes that the cost should be apportioned to each dwelling in the scheme and that where ordinary repairs are also involved the estimated cost to be given in respect of each dwelling should exclude the cost of the ordinary repairs which are not eligible for assistance.

In view of the disproportionate amount of work which would be involved if, in multi-storeyed blocks of flats, the estimated cost had to be assessed separately for each flat, the Minister is prepared to allow the averaging of the estimated cost of improvement works where all the flats in a multi-storey building form the subject of an application for assistance. He is not, however, prepared to agree to this principle being adopted in the case of rows of terrace houses.

7. *Bye-law Provisions.* Consideration will be given to an application for the relaxation of bye-laws in any case in which they would prevent the execution of improvement works which, in the opinion of the local authority, should be facilitated.

8. *Rents.* Information as to the proposed rents of houses after the improvements or conversion have been carried out is required before any decision on a proposal can be reached. In the case of improvement proposals of a local authority, the existing rents also are material to its consideration since, unless a loss to the local authority is foreseen at the outset as a result of carrying out the improvements, no case arises for consideration of assistance under the Act.

9. *Examination of Proposals.* (a) Plans. It is essential for the proper consideration of both local authorities' and private owners' proposals that adequate plans should be furnished showing the dwellings, or buildings, "as existing" and also "as proposed" after the execution of the works.

The heights of rooms should also be given since, as mentioned in paragraph 3 (vii), a minimum height of 7 ft. for habitable rooms should be required save in very exceptional circumstances. A site plan showing the situation of the dwelling under consideration in relation to the surrounding properties is also required. If the owner obtains technical advice, any fees payable form part of the expenses of carrying out the works of improvement.

(*b*) *Specification and Estimate.* The specification and estimate must be in sufficient detail to enable the local authority and the Department to determine what expenses are to be approved and to distinguish clearly between (i) the improvement or conversion works, and the repairs incidental to the carrying out of those works; and (ii) works of ordinary repair and maintenance, which are not eligible for assistance under the Act (except in cases of "conversion" only —see paragraph 2 (j)). They should be examined also with a view to securing economy in the use of scarce materials, particularly timber. (See Circular 100/49.)

(*c*) *Environment.* In considering any proposal, regard should be had not only to the house or houses (or building or buildings) immediately affected by the improvement or conversion, but also to the adjoining buildings, the general character of the neighbourhood and the rights and interests of adjoining owners.

B. Improvements by Local Authorities

10. *Minister's prior approval required in the case of local authorities' schemes.* Paragraph 15 of Appendix III to Circular 90/49 sets out the particulars which should accompany all individual proposals of local authorities under Section 15 of the Act submitted for approval. Attention is particularly drawn to the necessity for obtaining such prior approval.

11. *Purchase of houses and other buildings with a view to conversion or improvement.* It is particularly desirable in all cases where a local authority propose to purchase a property with a view to carrying out conversion or improvement works with assistance under the Act that the views of the Department should be sought before any definite steps are taken to acquire the property.

12. *Improvement of houses not already in the Housing Revenue Account.* Attention is drawn to paragraph 5 of the Second Schedule to the Act of 1949, which brings dwellings provided or improved with assistance under the Act into the Housing Revenue Account.

13. *Limits of Expenditure.* The limits of £100-£600 of estimated cost prescribed in the Act for privately owned houses will be applied also in the case of houses owned by local authorities, and generally no proposals outside these limits will be approved unless the house is of historic or architectural interest, or there are other exceptional merits.

C. Improvements by Private Persons

14. *Business Premises. Section* 23 (1)(*a*) *of the Act.* Section 23(1)(a) of the Act was intended to enable dwellings, such as farmhouses, which are used for both residential and business purposes, to be brought within the scope of the Act. Assistance can be granted, however, only in respect of the cost of the improvement of the dwelling accommodation. Where works such as the provision of drainage, water supply or electricity are carried out, which benefit both the dwelling and business accommodation, the cost of such works must be apportioned.

15. *Licensing.* Improvement works in excess of the free limit of £100 require a building licence, and before approving the making of improvement grants in individual cases the local authority must satisfy themselves that the necessary licence can be issued. As indicated in paragraph 11 of the Notes for Applicants, it is not intended that applicants should make a separate application for a building licence, but that Form B should be treated as constituting such an application. In the case, however, of a farmhouse, application for a building licence should be made to the Regional Licensing Officer of the Ministry of Works.

16. *Prior approval by the local authority before works are commenced.* The form in which a local authority's approval of an application for an improvement grant should be given is set out on page 23 of Circular 90/49. Attention is drawn to the necessity for obtaining the approval of the local authority before commencing works in Note 1 (a) of the leaflet entitled "Notes for Applicants." The requirement of Section 20 of the Act in this respect cannot be waived under any circumstances. Where, however, an applicant has commenced work in genuine ignorance of this provision but suspends operations pending approval, his application may receive consideration, but only in so far as it relates to improvement works not already commenced.

17. *Grant not available for subsidised houses.* As in the case of houses owned by a local authority, no improvement grant is payable in respect of any privately owned dwelling the erection of which was aided by Exchequer subsidy. Any application received in respect of a house built since 1919 should be carefully considered from this aspect.

18. *Repayment of grant in the event of a sale of the house.* If a house in respect of which a grant has been made is sold to a person for his own occupation, the grant will have to be repaid, but, if it is sold and the purchaser undertakes to let the house and otherwise to comply with the conditions of the grant, no breach would be involved.

19. *Contingencies.* No amount should be included under this head in the approved estimate, which is the amount of the expenses which in the opinion of the local authority are properly ascribable to the execution of the improvement works.

20. *Works carried out with the applicant's own labour.* Where an applicant for grant indicates that he intends to carry out the proposed works by his own labour, i.e. to do all the work himself or with unpaid labour, no sum in respect of the cost of

his own labour should be included in the estimate for the purpose of either grant or licence; only the cost of materials should be taken into account.

21. *Borrowing by local authorities for the purposes of the payment of improvement grants.* The Minister is prepared to issue for each six-monthly period, up to a maximum of one-half of the licensing ceiling, consent to a loan to the local authority to cover the grants likely to be made in that period. The moneys required would, of course, only be raised as and when required.

22. *Advances by local authorities under Section 4 of the 1949 Act in addition to improvement grants.* Advances may be made by local authorities under Section 4 in addition to grants under Section 20. If it is not intended to attach to advances under Section 4 any conditions other than those prescribed by the Section or to charge rates of interest in excess of those which may be charged for similar advances under the Small Dwellings Acquisition Acts, no approval on the part of the Minister is required and the local authority may proceed to operate the provisions of Section 4 forthwith. If, however, additional conditions are proposed to be attached to advances, or different rates of interest are contemplated, it will be necessary for the local authority to submit a draft of the conditions for the Minister's approval under subsection 1 of the Section before any advances can be made.

TECHNICALIA

THE ARCHITECTS' STANDARD CATALOGUES. (The Standard Catalogue Co., Ltd.) Price £6 6s. net.

THE APPEARANCE of the eleventh edition of this publication marks the fortieth year of its existence. The objectives which led up to the publishing of the original edition in 1910 were to ease the burden of manufacturers in supplying individual catalogues and trade literature and the difficulty experienced by architects in providing a rational system of keeping such individual catalogues in order.

The three large volumes of this new edition, containing 2,851 pages, amply fulfil these objectives, give information on virtually everything which an architect has to use or specify, and carry complete indices. The items on each page are listed, together with all trade, proper or brand names and manufacturers' names, addresses and branches, all well cross-indexed.

The publishers have stressed the importance of including technical data in the advertisements, realising that this is the type of information architects require. Some general technical information of interest to architects but of such a character as cannot be expected to be supplied in the catalogue pages is provided as an editorial addition and these pages, together with the various indices, account for approximately one-seventh of the total number of pages.

BOOKS RECEIVED

COLONIAL TIMBERS. By C. W. Bond. (London: Sir Isaac Pitman and Sons, Ltd.) Price 30s.

BRITISH STANDARD METHOD OF TESTING VULCANISED RUBBER. (London: British Standards Institution.) Price 21s.

⁂ *Books reviewed in these columns may be obtained on application to the Publisher, "The Builder," 4, Catherine-street, Aldwych, W.C.2. Cash should accompany the order.*

NATIONAL EMPLOYERS' FEDERATION

The Annual General Meeting

THE annual general meeting of the National Federation of Building Trades Employers took place on January 31 in London. Mr. Robert O. Lloyd presided.

Presenting the annual report, MR. LLOYD said that two warnings were necessary in connection with the reference to civil building in the Prime Minister's defence speech on January 29. The first was that experience had shown that a reduction in the licensing limit merely drove work into the black market. The second was that the provision of houses should be regarded as part and parcel of the country's defence programme.

"One of the lessons of the last war," he said, "was that if there is a shortage of living accommodation, schemes such as those for the evacuation of mothers and children, for the billeting of troops and transferred war-workers, and for the finding

SOME MEMBERS AND GUESTS AT THE NATIONAL FEDERATION DINNER AT THE DORCHESTER, JANUARY 30, 1951, *AS SEEN BY* SALLON. **Top row (left to right): Miss Margaret Stewart, Mr. I. M. Leslie, Sir Harold Emmerson, Sir Harold Wiles. 2nd row: Counc. Stephen Hudson, The Dowager Marchioness of Reading, Mr. Richard Stokes, M.P. (Minister of Works), Lord Terrington. 3rd row: Mr. L. E. Henderson, Ald. W. T. Lancashire, Sir Luke Fawcett, Mr. R. O. Lloyd. 4th row: Mons. Ducret, Sir Thomas Sheepshanks, Sir Richard Coppock, Sir John Wrigley**

Counc. Stephen Hudson (Pres. Elect) proposing "The Guests" at the National Federation dinner on January 30

of shelter for those whose homes are destroyed by air-raids, cannot properly be carried out. The need for accommodation is serious, and unless housing is speeded up, we might find ourselves in an impossible position in the event of war.

"This is no time for political prejudice. We not only want more houses, but we want them at the lowest possible cost to the rates and taxes. This can be done if Mr. Dalton, who has taken over the responsibility for housing from Mr. Bevan, makes it one of his first jobs to sweep away the 4: 1 ratio and to give the private builder the scope to build estates instead of building piece-meal. To force families whose need for homes is fully established, and who are willing to get them built privately at no cost to public funds, to live in heavily subsidised municipal dwellings is false economy.

"During 1950, the very real efforts we have made to increase productivity have been retarded by factors outside our control. Not only has output been restricted by government action but, despite the good work of the manufacturers who have increased production, we have been faced from time to time throughout the year with serious shortages of materials. Work all over the country has been slowed down. Indeed, on some sites it has been brought almost to a standstill. Some degree of control may be necessary, but the Government should realise that the industry can only give of its best if emphasis is shifted from what cannot be done to what can be done. A positive outlook is wanted.

"Until the materials pipe-lines are full, our efforts to achieve greater efficiency and reduced costs, by means of better planning in advance, of improved site organisation, of the better training of all from the management down to the operative, and of the introduction of payment-by-results schemes on a wider scale, will be seriously handicapped. No operative can be expected to give of his best when he realises that by so doing he is working himself out of materials and possibly out of a job. We know that the defence programme will make heavy demands on those materials we most urgently need, such as bricks, steel, cement and timber. But we must have these essential materials. To take timber as an example, we have only to look at the Report of the Anglo-American Productivity Team, which states, 'It is not necessary to emphasise the increased efficiency and economy which can be secured by adequate supplies of timber at a reasonable price. The use of unsuitable timber and substitute materials substantially increases the cost of British building.'

"Building costs are high—largely because of steady increases in the prices of materials. The second Girdwood Report showed clearly that our success in reducing the cost of building work, through improved output and economies in design and specification, has been more than offset by rises in the prices of materials. We are more anxious than anybody to keep building costs down, but we can only do this if the prices remain reasonably steady.

"What of the future of the building industry? We do not know yet what precise claims the defence programme will make upon us. Some switching from one type of work to another seems inevitable. In any event, our duty now is to profit from the reports of the Working Party and of the American Team, to step up efficiency in every direction, and to go all out in a determined effort to introduce payment-by-results schemes on every possible job. Our industry came through with flying colours in the years 1939-45 and we are confident that we can, if need be, survive an even severer test."

In the course of the discussion on the annual report, a member from London asked the president if he could give the meeting any information on the steel problem. In reply, Mr. Lloyd said that there was general concern about the disappearance of steel, but he told the meeting that the Minister of Works was doing everything in his power to ensure adequate supplies to the building industry.

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Lady Reading responding for "The Guests" at the National Federation dinner held at the Dorchester

On the question of incentives a Southern Counties member said that he thought the agreement reached with the operatives was as good as it could be. He suggested that builders should apply incentives on a fixed percentage basis and not on a variable basis. A member from Stockport received considerable support from the meeting when he stated emphatically that he was opposed to any national yardstick in the matter of incentives.

In regard to contract matters a member drew attention to the fact that there could only be 12 items in the rise and fall clause of the Air Ministry contract and further emphasised that two sizes of pipes or two different types of bricks would be considered as two items, thus having the effect of shortening the list to ridiculous proportions. Mr. W. W. Sapcote, in reply, said that the Federation were looking into the matter.

On the subject of education and training, a London member expressed concern at the ignorance, on the part of builders, of the training facilities available at the various technical schools and colleges throughout the country for all ranks in the industry. He also thought that members of the Federation should know quite clearly what the various certificates and diplomas, which were awarded by such schools, stood for.

A Torquay contractor thought that the rates of pay for apprentices were too high and suggested that a number of members could not afford the present cost of training apprentices. A member from Wiltshire disagreed with him and said that to improve the status of the operative they must secure a supply of the right lads. He said that it might mean a higher cost at the outset, but it was his opinion that a higher standard of craftsmanship and higher production went hand in hand and to secure these they would have to pay a proper and fair wage.

Councillor Stephen Hudson was elected President for the ensuing year, and was invested by Mr. Lloyd. Messrs. J. Ian Robertson, W. Horsfall and E. W. Garrett were elected Vice-Presidents.

MAKING CEMENT GO FURTHER

Addendum to Economy Memorandum

THE Ministry of Works has now issued an addendum to its economy memorandum, *Use of Cement in Engineering and Large-Scale Building* (P.I. 31/6), published in April, 1949. The addendum draws particular attention to the quality control of concrete, and explains how further economies can be made in the use of cement. The text of the addendum is given below.

The cement economy memoranda P.I. 31/5 and P.I. 31/6, previously issued, made reference to the desirability of quality control of concrete, and the purpose of the present addendum is to emphasise this aspect and also to give examples of construction carried out by the Ministry of Works in which large savings of cement have been made by special consideration of the concrete proportions.

The design of a concrete mix, as distinct from the acceptance of arbitrary proportions to satisfy limiting bye-law or code requirements, can lead to a saving of cement of the order of ten per cent. without a loss of compressive strength. This design involves a consideration of the grading of the aggregates, and the cement and water content, necessary to produce a concrete of maximum density and adequate workability. The degree of workability to be aimed at is closely dependent on the type of construction and the equipment available for compacting the concrete.

It is common practice, for most reinforced concrete construction, to use a continuously-graded aggregate. For mass-concrete construction in heavy foundation work, and for similar constructions where heavy internal vibration is practicable, a concrete of low workability is suitable, and for this concrete the aggregates may often be quite satisfactory with a discontinuous grading. In all cases, the careful selection of the grading most suitable for the work in hand is beneficial in reducing the voids and hence the amount of cement.

Preliminary Trials

The use of discontinuous gradings, or of proportions not specifically allowed by bye-laws or codes, is dependent on preliminary trials being made under the supervision of a competent engineer, to show that the workability and compressive strength are adequate and that segregation does not occur.

The following examples of work, carried out by the Ministry of Works, indicate the saving in cement attained in a few instances in actual construction, without any lowering of the minimum strength of the concrete.

A 22-ft. reinforced concrete road for heavy vehicular traffic, two miles in length, has been constructed with a saving of eight per cent. of cement on normal specification requirements, by paying attention to the trial grading of fine and coarse aggregates, coupled with a strict control of the water/cement ratio and the use of surface-vibrators for compacting the concrete.

In another instance, a large reinforced concrete wind tunnel is being constructed with a "gap-graded" concrete, compacted with internal vibrators, leading to a saving of 13 per cent. of cement; and in a further case some extensive floors have also shown a saving of 13 per cent.

The Ministry realises that the technical questions involved will ultimately need careful consideration by those authorities responsible for building regulations, codes and standards, but it is hoped that the above examples may be regarded as precedents which can be usefully followed by all concerned with concrete construction, in order that the shortage of cement may not unduly interfere with urgent work of national importance.

Quality Control of Concrete

It is of course important that, when a concrete mix has been specially designed to have a required strength and an adequate workability for a certain method of compacting, the supervision of the concreting operations should be so arranged as to ensure that the specification requirements for materials, proportioning, mixing and placing are in fact, met without lapse. The following notes are intended to give guidance on some of the precautions necessary.

(a) *Choice of Materials.*—All the cement for a particular construction should, wherever possible, be obtained from the same works; this, however, may often be impracticable owing to the delay involved. It is also desirable to obtain all the aggregates from the same source.

The grading of the aggregates should, in preliminary tests, be determined with reference to samples from the suppliers. Throughout the course of the work, the suppliers should be required to maintain the grading and quality of the materials as represented by the samples.

(b) *Design of Mix.*—Even with very good control, some variation in the quality of site concrete is unavoidable. The mix should, therefore, be designed* to have a strength 11/3 times that required as a minimum. The design strength should be realised in preliminary tests or, if not, the proportions should be modified accordingly. The proportions (particularly the water content) finally chosen should be maintained throughout the work, unless the materials are changed, in which case further trials should be made to ensure that the mix is satisfactory.

(c) *Batching.*—Aggregates should be measured by weight in approved weighbatchers. Cement may be weighed or measured by whole 1 cwt. bags. Water should be measured by volume in calibrated tanks or weighed. The accuracy of all measuring equipment should be checked at least every six working days and when brought into use after standing idle for more than a week, or after being transported from another place. An accuracy of 1 per cent. in the weights of the materials used in a batch should be aimed at.

(d) *Water content.* It is most important to maintain the correct water/cement ratio. The moisture in the aggregates should be frequently determined and allowed for. To reduce the variability of the moisture content in aggregates it is advisable to keep stockpiles holding 1-2 days' supply, and not to use the bottom 18 in., which acts as a drain.

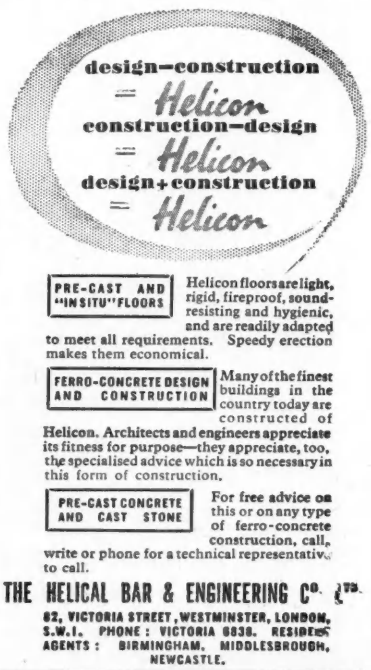
(e) *Works cubes.* At the commencement of the work, three samples of concrete should be taken on each of the first four days. The samples should be taken near the beginning, middle and end of the days. Three 6-in. cubes should be made out of each sample as described in B.S. Code of Practice CP 114. These should be tested at 28 days, except for the cubes from one sample on each of the days, which should be tested at 7 days to give an early indication of the quality of the concrete. Should the strengths of these cubes be below the prescribed value for the works test, adjustment of the mix should be made accordingly.

Subsequently, the frequency of sampling should be decided by the concrete supervisor, having regard to the type and extent of the constructional work; however, at least one sample should be taken per week.

(f) *Supervision.* A competent person should be employed to supervise the preparation and use of concrete on the site in all its stages. He should also be responsible for recording the results of all tests on materials and on concrete test-pieces.

Copies of the addendum can be obtained free of charge from the Ministry of Works (Room 617), Lambeth Bridge House, London, S.E.1.

* Valuable guidance on the design of concrete mixes can be obtained from Road Note No. 4 prepared by the Road Research Laboratory.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THE DEFENCE PROGRAMME

N.F.B.T.E. Pledges Aid

SPEAKING at the annual dinner of the Leicester and District Association of Building Trades Employers at Leicester, on Wednesday, MR. STEPHEN HUDSON, President of the National Federation of Building Trades Employers, said the basic job of the building industry was to do whatever the country required of it. "We builders are justly proud of our record as a service to the public and whole-heartedly pledge our aid to the country in the difficult time ahead. We do not yet know what our precise part in the defence programme is to be, but the sooner we are told the sooner can we get moving and make the necessary redeployment of our resources and labour force," said Mr. Hudson.

"Whatever we are called upon to do," he continued, "it is essential that the country realises that it cannot count on the highest efficiency from the industry unless adequate steps are taken to ensure that ample supplies of building materials are readily available on the site."

THE BUILDING MATERIALS TRADE

Board of Trade Census of Production

THE Board of Trade have issued *Preliminary Report No.* 120 on the building materials trade relating to establishments engaged wholly or mainly in the treatment of stone (including manufacture of monumental masonry), and in the manufacture of prefabricated concrete products, artificial paving stone, asbestos cement goods, lime, plaster of paris, etc. This report covers only establishments which employed more than ten persons on the average during the year, including three Government establishments, in 1948. Firms that treated stone obtained from their own quarries are covered by the report on non-metalliferous mines and quarries.

It is estimated that about 98 per cent. of the total net output of these establishments for 1948 is covered by the returns which have been compiled for inclusion in this report. This trade corresponds to minimum list heading 29 (2) in the Standard Industrial Classification together with heading 29 (3) apart from manufactured fuel, roofing felt, plumbago crucibles, ceramic glazes and frits and mica goods.

Establishments in this trade in Northern Ireland (which are excluded in 1948) accounted in 1935 for less than one per cent. of the net output for the United Kingdom.

TABLE I—GENERAL SUMMARY

	1948 (*a*)	1935 (*b*)
	£'000	£'000
Value of production (gross output) ...	60,543	17,939
Cost of materials, fuel and electricity used	26,193	7,803
Amount paid for work given out ...	587	157
Net output	33,763	9,979
Wages and salaries of persons employed	19,199	—
	No.	No.
Average number of persons employed	56,308	37,616
	£	£
Net output per person employed ...	600	265
	No.	No.
Number of establishments	907	801

(*a*) Great Britain only. (*b*) United Kingdom.

The values of production and of materials, fuel and electricity used in 1948 are derived in the following way:—

	Output	*Materials, etc.*
	£'000	£'000
Total value of sales or purchases ...	62,821	26,325
Adjustments for stocks and work in progress	+929	—132
	63,750	26,193
Less payment for transport by other firms	3,207	
	60,543	

TABLE II—STOCKS OF FINISHED PRODUCTS ETC., MATERIALS AND FUEL IN 1948

	Beginning of year	*End of year*
	£'000	£'000
Finished products and work in progess	4,311	5,240
Materials and fuel	3,844	3,976

CAPITAL EXPENDITURE

TABLE III—PLANT, MACHINERY AND VEHICLES

	Acquired during 1948		*Disposed of during 1948*
	New	*Second-hand*	
	£'000	£'000	£'000
Plant and machinery ...	2,225	168	170
Vehicles	365	129	52
Total	2,590	297	222

TABLE IV—NEW BUILDINGS ACQUIRED

	1948
	Amount
	£'000
Capital cost of new buildings (including extensions, etc.) acquired during the year, excluding site value	577

TABLE Vb—GOVERNMENT DEPARTMENTS

	Operatives (average for the year)	*Administrative, technical and clerical staff (a)*	*Total*
	1948	1948	1948
	No.	No.	No.
Males—			
Under 18 ...	4	—	4
All ages ...	1,217	141	1,358
Females—			
Under 18 ...	1	1	2
All ages ...	206	51	257
Total—			
Under 18 ...	5	1	6
All ages ...	1,423	192	1,615(*b*)
Total remuneration	£'000 432	£'000 92	£'000 524

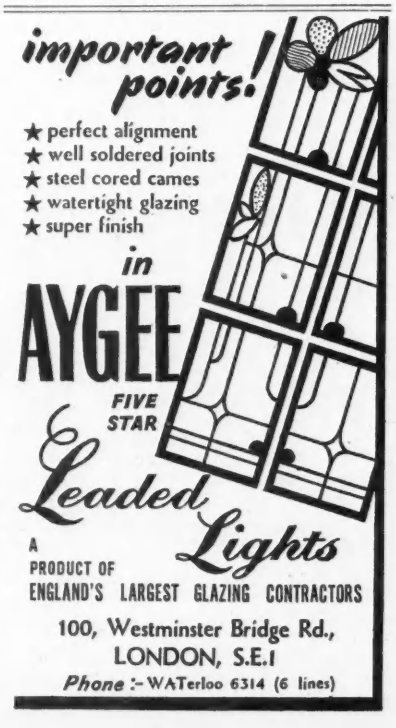
(*a*) At September 25, 1948. (*b*) The employers' share of contributions to all National Insurance Schemes payable during the year in respect of these workers amounted to £14,000.

EMPLOYMENT, WAGES and SALARIES

TABLE Va—PRIVATE FIRMS

	Operatives (average for the year)		*Administrative, technical and clerical staff (a)*		*Total*	
	1948 (*b*)	1935 (*c*)	1948 (*b*)	1935 (*c*)	1948 (*b*)	1935 (*c*)
	No.	No.	No.	No.	No.	No.
Males—						
Under 18	2,153	2,679	313	251	2,466	2,930
All ages	44,601	32,179	5,942	3,723	50,543	35,902
Females—						
Under 18	119	213	385	93	504	306
All ages	1,782	829	2,222	885	4,004	1,714
Total—						
Under 18	2,272	2,892	698	344	2,970	3,236
All ages	46,383	33,008	8,164(*d*)	4,608	54,547(*d*)(*e*)	37,616
	£'000		£'000		£'000	
Total remuneration ...	15,187	—	3,488	—	18,675	—

(*a*) At September 25, 1948, and October 12, 1935. (*b*) Great Britain only. (*c*) United Kingdom. (*d*) There were, in addition, 146 working proprietors (141 males and 5 females) in 1948. Working proprietors are included in the 1935 figures. (*e*) The employers' share of contributions to all National Insurance Schemes payable during the year in respect of these workers amounted to £453,000.



CHECKING THE SPREAD OF FIRES

A National Building Study

THE DAMAGE done by fires in buildings can be limited if doors are made fire-resistant enough to delay the spread of the fire to other rooms. A resistance giving a delay of only half an hour is often enough to enable a fire brigade to obtain control of the outbreak before other parts of the building are affected.

**Fire Resistance in Timber Doors* describes an investigation carried out by the Building Research Department of Scientific and Industrial Research into methods of improving the fire resistance of existing doors and of designing new doors which will resist the spread of fire.

Economical ways were found of using plasterboard or thin metal sheathing to make existing doors more resistant. Two new designs for inexpensive doors were produced. Doors made to the designs can be produced cheaply and they will give the half-hour resistance required.

Tests on various types of doors showed that there is little difference in the fire-resisting qualities of hardwoods and softwoods.

*National Building Studies Technical Paper No. 6. "Investigation on Building Fires. Part IV. Fire Resistance of Timber Doors." Published by H.M.S.O. for D.S.I.R. Price 1/-. By post 1/1d.

NEWS IN BRIEF

Gosfield Hall to be Saved

Mr. Hugh Dalton, Minister of Local Government and Planning, has announced his intention to make a building preservation order to safeguard Gosfield Hall, Halstead, Essex. This decision, which follows a public inquiry, means that the building cannot be demolished or altered without the consent of the Essex County Council.

Helicopter Station Plan Rejected

The Court of Common Council at Guildhall, London, recently agreed without discussion to a recommendation of its improvements and town planning committee turning down a plan to build a helicopter station on the roof of an exhibition hall and office block in Aldersgate-street. The committee stated that the proposal would not conform to the zoning in the development plan.

The Scientific Film Association

A conference organised by the Scientific Film Association, 4, Great Russell-street, W.C.1, on "The Use of the Film in Training for Industry," will be held in the Hotel Majestic, St. Annes-on-Sea, during the week-end March 30-April 1 next, when a number of both professional and amateur films will be shown. The fee to cover registration and conference expenses is one guinea, and the association will also undertake to book accommodation at the hotel.

British Council's 1951 Courses

The scope of the British Council's 1951 programme of short courses and summer schools in Great Britain for visitors from overseas has been extended this year to include a provisional programme of 12 special courses related to the Festival of Britain and particulars of three university summer schools, as well as listing 13 specialist and 17 educational and general courses to be held in some 20 different centres in England, Scotland and Wales between March and November.

The South Bank "Skylon"

Preparations are now in hand for the erection of the "Skylon," the symbolic emblem for the Festival of Britain South Bank site. The arrival on the site this week of the three supporting pylons ended a considerable feat of road haulage for the 70-feet long, 6½-ton pylons had to be transported 138 miles from the Painter Bros., Ltd., works at Hereford. A special lorry-trailer was commissioned for the purpose and was guided *en route* by the police. The supply and construction of the "Skylon" is the responsibility of British Insulated Callender's Construction Co., Ltd.

"Conquest of the Desert" Exhibition

An exhibition showing the achievements of various nations in their struggle with the desert and displaying their efforts to settle wild regions is to be held in the buildings and grounds of the Jerusalem Convention Centre in the spring of 1952. The industries which are being invited to exhibit include the following: irrigation, building, transportation and power supply, and research and planning equipment. The space available for exhibits is 8,000 sq. metres under cover and 30,000 sq. metres outdoors. Space rentals and further information can be obtained from Miss M. Cowan, Festival and Convention Centre, The Jerusalem 1952 Exhibition Company, 7, Cork-street, W.1.

TRADE NEWS

Manchester Branch Office

Air Control Installations, Ltd., have opened a branch office at 70, Mosley-street, Manchester 2. (Tel.: Central 0679 and 0670.) The manager is Mr. F. Wright.

New Crawler Tractor

Mackay Industrial Equipment, Ltd., Faggs-road, Feltham, Middlesex, have announced the introduction of a new Fiat Crawler Tractor, and have issued a booklet giving information on the three models and accessories.

Cold Pressure Welding

A revised edition of "Cold Pressure Welding" has been produced by The General Electric Co., Ltd. This new brochure gives details of recent developments in the field of joining metals by means of homogeneous welds produced solely by pressure at room temperature.

Jubilee Brochure

To commemorate their jubilee, the Associated Portland Cement Manufacturers, Ltd., the parent company of the Blue Circle Group, have issued an illustrated brochure which records significant events during 50 years of trading and tells the story of the development of a world-wide organisation.

An Improved Folding Weigher

Blaw Knox, Ltd., Clifton House, Euston-road, London, N.W.1, have announced that they are now manufacturing an improved folding weigher. This new machine embodies a new cradle design together with other improvements which achieve a substantial reduction in weight. The weigher can be supplied for either 10S or 7S "Rex" concrete mixers and can be fitted in the field.

Flooring Exhibition Opened

An exhibition of modern flooring materials organised by R. G. Dixon and Co., Ltd., and Columbus, Ltd., has recently been opened at the Quadrant Arcade, Regent-street, W.1. Over 50 different examples of flooring, contributed by 44 floor manufacturing companies, are on view. These are representative of the basic flooring materials: hardwood, cork, rubber, composition, linoleum, tiles, jointless flooring, plastic, terrazzo, and granolithic.

THE SCOTTISH BUILDER

Scottish Building Trade Wages

Wage rates for building trade labourers in Scotland authorised by the N.J.C. from February 5, 1951, are 2s. 5½d. an hour, and not as stated in our last week's issue.

NEW BUILDINGS

Glasgow.—New fire station at Townhead on Cathedral and Cawmore-sts. site, for which the architect and engineer is Mr. Robert Arnott, Master of Works Office, Municipal-bldgs., George-sq., Glasgow, C.1.

Kirkcaldy.—New public school to be erected at Sauchenbush at an estimated cost of £116,000. Plans to be prepared by the architect, Mr. R. S. Lawrie, A.R.I.B.A., A.M.T.P.I., County-bldgs., St. Catherine-st., Cupar, Fife

Lanarkshire.—C.C. propose to erect 74 houses on the Allerston housing site, Shotts, for which the architect is Mr. Samuel MacColl, A.R.I.B.A., County-chbrs., Beckford-st., Hamilton.

Lanarkshire.—C.C. propose to erect 46 houses on a site at Chapelhall, for which the architect is Mr. Samuel MacColl, F.R.I.B.A., Council-chbrs., Beckford-st., Hamilton.

FUTURE CONSTRUCTION

PUBLIC APPOINTMENTS

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

FEBRUARY 14.

***†Newcastle-upon-Tyne Regional Hospital Board.**—Animal House, Friarage Hospital, Northallerton. E. B. Jenkins, Sec., "Dunira," Osborne-rd., Jesmond, Newcastle.

FEBRUARY 15.

***†Brierley Hill U.D.C.**—114 dwellings, Market-st. site, Kingswinford. J. R. Moore (A.), Council Offices. Dep. £2 2s.

FEBRUARY 16.

***†Birmingham T.C.**—107 houses and bungalows at California estate, Barnes Hill, Wesley Castle. H. J. Manzoni, City E. & S., Civic Centre. Dep. £2 2s.

***†Herne Bay U.D.C.**—20 flats, Victoria Park. A. S. Wilson & Partners, 8, Princes-st., Westminster, S.W.1. Dep. £2 2s.

***†North-East Metropolitan Regional Hospital Board.**—Modernisation of wards, St. Andrew's Hospital, Devons-rd., Bow, E.3. Secretary, 11a, Portland-pl., London, W.1.

FEBRUARY 19.

***†Bristol T.C.**—Primary school at Park-gr., Herleaze. City A., Eagle House, Colston-ave. Dep. £2 2s.

***†Derby C.B.**—Three police houses at Stenson-rd. Boro.' A., Council House. Dep. £2 2s.

Dunmow (Essex) R.D.C.—14 houses, Stortford-rd., Great Dunmow. Armstrong and Cunningham, architects, 57, High-st., Braintree. Dep. £3 3s.

***Macclesfield T.C.**—23 houses at Weston. Boro.' A., 3, Jordangate. Dep. £2 2s.

***†Wallingford R.D.C.**—78 flats, Newlands housing site, Didcot. Beecher & Stamford, architects, 14, Park End-st., Oxford. Dep. £2 2s.

***†West Sussex C.C.**—Erection of brick building for Divisional Surveyor and staff at Sullington Highway Depot.

FEBRUARY 21.

***†Leeds Regional Hospital Board.**—Two ward blocks at Westwood Hospital, Bradford. Architect to the Board, 29-31, Eastgate. Dep. £2 2s. Tenders by March 14.

***†Norfolk E.C.**—Alterations to King Edward VII Grammar School, King's Lynn. G. W. Oak (A.), Education Architect, Stracey-rd., Norwich. Dep. £2.

***†Wandsworth B.C.**—Three-storey block of six flats at Langley-rd. T.C., Municipal-bldgs.

FEBRUARY 23.

***†Derbyshire C.C.**—Panel of building contractors for new schools and major building contracts. F. H. Crossley (F.), County Architect, St. Mary's Gate, Derby.

Ely (Cambs) U.D.C.—Ten bungalows, Springhead-la Architect, Urban Council Office, Lynn-rd., Ely. Dep. £1 1s.

*†**Hampshire C.C.**—Third instalment of Aldershot Manor Park Sec. Sch. County A., The Castle, Winchester. Dep. £3 3s.

*†**Royston U.D.C.**—14 houses, Ermine-close. C. E. Ball & Ptnrs., quantity surveyors, Dilke House, Malet-st., London, W.C.1. Dep. £3 3s.

*†**Woking U.D.C.**—Construction of Percy-st. car park. E. & S., Council Offices. Dep. £2 2s.

FEBRUARY 24.

*†**Eton U.D.C.**—34 dwellings. E. & S., Council Offices, High-st. Dep. £2 2s.

FEBRUARY 26.

Doncaster C.B.—Construction of a day nursery at Stanley House, Tickhill-rd. B.E., 2, Priory-pl., Doncaster. Dep. £3 3s.

*†**Durham County Police Authority.**—Five pairs of police houses at Duckpool-la., Whickham. County A., Court-la.

Ossett B.C.—50 houses, Switherbank estate. Boro.' S. Dep. £2 2s.

*†**States of Guernsey.**—14 houses at Rue des Grons, St. Martin's. G. Heggs, States Eng., States Office Annexe. Dep. £2 2s.

FEBRUARY 27.

*†**Ilford Boro.'**—Extension to greenhouses and heating, Valentines Park. B.E. & S. Dep. £2 2s.

Risca U.D.C.—Four blocks of two houses each at North-rd., Pontywain, Crosskeys. E. & S. Dep. £3 3s.

*†**Shipston-on-Stour R.D.C.**—13 houses. E. H. Earp (L.), architect, Scholars-la., Stratford-on-Avon. Dep. £2 2s.

FEBRUARY 28.

*†**Colchester T.C.**—36 houses (3 types), Shrub End site. J. S. Orchard, B.E. Dep. £2 2s. each type.

*†**Glamorganshire C.C.**—Colleges at Aberdare and Gorseinon. County Architect, Cardiff. Dep. £2 2s.

*†**Luton T.C.**—Public conveniences at The Moor, Bell-cl. and Dallow-rd. B.E., Town Hall. Dep. £2 2s.

MARCH 1.

*†**Chesterfield R.D.C.**—Extension of public convenience at Southgate. E. & S. Dep. £2 2s.

MARCH 2.

Crompton U.D.C.—28 dwellings, Lower Rushcroft estate. E. & S. Dep. £2.

*†**Southend-on-Sea C.B.**—Block of 30 flats, 10 shops and garages at County-sq., site No. 5. B.E. & S. Dep. £2.

*†**Southend-on-Sea C.B.**—Primary school at Blenheim Chase. Architect to the E.C. Dep. £2 2s.

MARCH 3.

Wantage R.D.C.—Erection of four houses in Hampstead Norris, four in Compton and four in Childrey. Surveyor, Council Offices, Belmont, Wantage. Dep. £2 2s.

MARCH 5.

*†**Beddington and Wallington T.C.**—8 houses, Guy-rd., Wallington. B.E. & S.

*†**Great Yarmouth C.B.**—Renovation and repair of Marina, Marine-parade. B.E.

*†**Hornchurch U.D.C.**—15 bungalows and one house at Albany-rd. and Broadstone-rd., Maylands Green estate. E. & S., Council Offices. Dep. £2 2s.

*†**Letchworth U.D.C.**—24 and 26 houses, Easterway, Grange estate. S. Dep. £3 3s.

MARCH 6.

*†**Brighton C.B.**—85 houses at Parkside extension, Coldean. B.E. & S., 26-30, King's-rd. Dep. £2 2s.

MARCH 7.

*†**Shaftesbury R.D.C.**—9 houses, etc., Watery-la., Iwerne Minster. J. Hoy, S. Dep. £3 3s.

MARCH 9.

*†**Birkenhead C.B.**—Superstructure for new Technical College, Borough-rd. Willink and Dod (F.F.), Cunard-bldgs., Liverpool, 3. Dep. £3 3s.

MARCH 10.

*†**Chippenham T.C.**—Improvements and alterations to municipal offices, 9 and 10, Market-pl. B.S. Dep. £2 2s.

MARCH 12.

*†**Bournemouth C.B.**—14 bungalows at Longbarrow estate. Boro' A. (Room 98). Dep. £2 2s.

*†**Stocksbridge U.D.C.**—50 houses, Stubbin Farm estate, Deepcar. J. Hodgkinson, Clerk. Dep. £2 2s.

MARCH 14.

Bury St. Edmunds B.C.—Eight shops with maisonettes over, Mildenhall estate. Mitchell and Weston, architects, 38, Churchgate-st., Bury St. Edmunds. Dep. £2 2s.

MARCH 15.

*†**Camberwell Boro'.**—60 flats, Cleve Hall housing estate. S. J. Harvey, Acting Town Clerk. Dep. £2 2s.

*†**Camberwell T.C.**—40 dwellings, Herne Hill housing site. S. J. Harvey, Acting Town Clerk. Dep. £2 2s.

MARCH 16.

*†**Lincoln (Parts of Kesteven) C.C.**—Erection of Sec. School, North Hykeham. Watkins, Coombes & Partners, Heslam-chbrs., 191, High-st., Lincoln.

MARCH 17.

*†**Weston-super-Mare T.C.**—60 flats at the Summerlands estate. B.E. & S., Town Hall. Dep. £2 2s.

MARCH 19.

Carlton U.D.C.—18 pairs of houses at Fraser-rd. and 3 pairs at Valley-rd. E. & S., Council House, Burton-rd. Dep. £3 3s.

NO DATE.

*†**Guildford Boro'.**—98 houses, Bushey Hill, Merrow. B.E. & S. Dep. £2 2s.

"THE BUILDER" PRICES

LEAD PRODUCTS INCREASE

Owing to the continued increase in the cost of materials and manufacturing processes, Associated Lead Manufacturers, Ltd., have amended the prices of the following lead products. These new basis prices came into effect on February 6.

	To-day's basis price per ton £ s.
Genuine English dry white lead (basis in 1 x 8 cwt. cask)	162 0
Genuine ground English white lead (basis in 1 x 5 cwt. cask)	179 0
Genuine refined English red lead (basis in 1 x 5 cwt. cask)	155 0
Genuine English powdered litharge (basis in 1 x 5 cwt. cask)	155 0
Genuine refined English red lead ground in oil (basis in 1 x 5 cwt. cask)	175 10
English sheet lead (basis for 2-ton lots) unchanged at	156 5
English lead pipe (basis for 2-ton lots) unchanged at	157 10
English lead shot (basis for 1-ton lots) unchanged at	164 5

These prices are subject to withdrawal and alteration without notice.

*†**New Windsor Royal Boro'.**—Eight houses at Dedworth Manor central site. B.E., Kipling Memorial Building. Dep. £2 2s.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

FEBRUARY 17.

Eccles B.C.—B.S. (Materials).

FEBRUARY 19.

Dewsbury C.B.—B.E. (Materials).
Frinton and Walton U.D.C.—E. & S. (Materials).
Southampton C.B.—B.E. & S. (Materials).
Sunderland B.C.—E. (Materials).
Widnes B.C.—B.E. & S. (Materials).

FEBRUARY 20.

*†**Manchester Regional Hospital Board.**—Engineering services, High Carley sanatorium, near Ulverston. T. Duffy (F.), architect, Sunlight House, Quay-st., Manchester, 3. Dep. £2 2s. (Tenders by March 20.)

FEBRUARY 21.

Ashton-under-Lyne B.C.—E. & S. (Materials).
Brentwood U.D.C.—E. & S. (Materials).

*†**Lincoln (Parts of Kesteven) C.C.**—Electrical works and engineering services at Sec. Sch., North Hykeham. Watkins, Coombes & Partners, Heslam-chbrs., 191, High-st., Lincoln.

FEBRUARY 22.

Barking B.C.—E. & S. (Materials).

FEBRUARY 24.

Hucknall U.D.C.—S. (Materials).
Littleborough U.D.C.—E. & S. (Materials).
Maidstone B.C.—S. (Materials).

FEBRUARY 26.

Brierley Hill U.D.C.—E. & S. (Materials).
Godalming B.C.—B.S. (Materials).
*†**Salford T.C.**—Heating and hot water installation, etc., at Primary Sch., Summerville-rd. J. Roger Preston & Partners, Dilke House, Malet-st., London, W.C.1. Dep. £3 3s.

FEBRUARY 27.

Tees Valley Water Board.—C. (Materials).

FEBRUARY 28.

Huddersfield C.B.—B.E. & S. (Materials).

MARCH 1.

Burgess Hill U.D.C.—E. & S. (Materials).

MARCH 3.

Lytham St. Annes B.C.—E. & S. (Materials).

ROADS, SEWERAGE AND WATER WORKS

MARCH 2.

Manchester T.C.—Construction of roads and sewers on Hillside estate, Blackley. City S., Town Hall, Manchester, 2. Dep. £2 2s.

MARCH 3.

*†**Mitcham T.C.**—Advance preparation works at Ravensbury estate (section 2), Morden-rd. B.E. & S., Town Hall.

MARCH 12.

Kidderminster R.D.C.—Construction of sewers and other works, Wolverley and Cookley. Fiddian and Deeley, engineers, 13, Church-st., Stourbridge. Dep. £5 5s.

NO DATE.

Louth R.D.C.—Water supply to the parishes of Burwell, Walmsgate, South Thoresby, Raithby and Tathwell. J. H. Haiste, 4, Queen-st., Woodhouse-la., Leeds, 2. Dep. £3 3s.

GENERAL BUILDING WORK (LONDON)

Balham.—EXTENSION.—Lansdown and Devereux, F. & A.R.I.B.A., 3, Gower-st., W.C.1, are the architects for extension to St. James' Hospital to cost £300,000.

Battersea. — WAREHOUSE EXTENSION. — Brantom, Shirley & Co., Ltd., are to extend existing warehouse at Vicarage Wharf, Vicarage-cres. The architect is R. P. Sharman, A.R.I.B.A., 55, Queen Anne-st., W.1.

Battersea.—WELFARE CENTRE.—The Architect to the L.C.C. has prepared plans for a maternity and child welfare centre on the site of 7 to 11 (odd), Stormont-rd. to replace the one in Gideon-rd. Est. cost, £14,266.

Becontree.—FLATS.—L.C.C. housing com. propose to erect four flats on the Ivyhouse-rd. site at an est. cost of £5,320. Plans by the housing architect under the direction of the director of housing and valuer.

Greenwich.—MAISONETTES AND SHOPS.—B.C. to erect nine shops, eight maisonettes and five flats at Plumbridge-st. Boro' E.

Hendon.—SYNAGOGUE.—Permission granted by B.C. for erection of synagogue with ancillary buildings at Kenilworth-rd.

Lewisham.—FLATS.—Fry, Drew & Partners, FF.R.I.B.A., 63, Gloucester-pl., Portman-sq., W.1, have applied to erect 54 flats and outbuildings at Whitefoot-la.

Lewisham.—HOUSES AND FLATS.—Boro' architect has applied to erect nine flats at Nos. 38-42, Silverdale; 32 flats on north side of Whitefoot-la.; eight houses between Nos. 56 and 70, Newlands Park; and 22 houses on site of "Thriffwood," Silverdale.

Lewisham.—REBUILDING.—L.C.C. have granted application of Oscar Faber & Partners, consultant engineers, 4, Verulam-bldgs., Grays Inn, W.C.1, for the rebuilding of portion of Siemen's Works, Grote's-pl.

Lewisham.—FLATS.—Hampton Lovatt & Partners, 44, St. James'-pl., S.W.1, have applied to erect (a) two blocks of 10 flats, or (b) one block of 20 flats on sites of Nos. 6, 7 and 8, Eliot Bank.

Lewisham.—TOWN HALL EXTENSION.—Boro' architect has prepared plans for the extension of the Town Hall, Lewisham.

Leyton. — MAISONETTES. — B.C. to erect 50 maisonettes and one flat to cost £17,818 at Leyton.

Muswell Hill.—RESTORATION OF CHURCH.—The address of Caroe & Partners, who are architects for the restoration of St. James's Church, is 16, Gt. College-st., S.W.1, and not as given in our issue of last week.

Poplar.—WAR DAMAGE REPAIRS.—L.C.C. Ed. Com. have approved a scheme, prepared by Pite, Son & Fairweather, FF.R.I.B.A., 6, Queen Anne's-gate, S.W.1, for the repair of war damage and the com-

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pletion of the extension to the poplar technical college. Est. cost, £52,983.

Poplar.—SCHOOL.—L.C.C. Ed. Com. have approved preliminary plans for a county primary school at St. Leonard's-rd. Plans by the Architect to the Council. Est. cost, £109,275.

St. Paul's Cray.—SHOPS.—L.C.C. to erect 51 shops on housing estate at St. Paul's Cray.

Wandsworth.—FLATS AND MAISONETTES.—L.C.C. propose 227 flats and 24 maisonettes in 12 blocks on the Chartfield-ave. site, Wandsworth. Architects are Lanchester and Lodge, FF.R.I.B.A., 10, Woburn-sq., W.C.1. Est. cost, £499,000.

Wandsworth. — FLATS. — Dawney & Carpenter, LL.R.I.B.A., 131, Victoria-st., S.W.1, have prepared plans for 60 flats on the West Hill site, Wandsworth, for the L.C.C. Est. cost, £112,800.

(PROVINCIAL)

Ashton-under-Lyne.—B.C. approved plans for extensions to works at Ormonde-st., for Ormonde Ashton Co., Ltd., and motor garage and showroom at Cavendish-st., for W. Monk, Ltd.

Bakewell.—R.D.C. to erect 20 houses at Eyam and eight at Hathersage.

Bishop Auckland. — Durham C.C. to adapt old isolation hospital as ambulance stn. to plans by Cty. A., Court-la., Durham. No contracts let.

Boldon.—U.D.C. Surveyor (N. Hindmarch) has prepared layout plans for 142 houses, shopping centre, garages, etc., on Section 3 of Boldon housing scheme. M.H. approval being sought.—N.C.B. to erect two communal washhouses at Hilton-st., Marsden.

Brighouse.—B.C. approved plans for extensions to works at Brooke-st., Rastrick, for J. W. Miller & Sons, Ltd.

Carlisle.—E.C.'s scheme for new inf. sch. at Harraby, to cost £48,000, has been approved. Plans by City S., 18, Fisher-st., Carlisle.

Cheshire.—Ed. Com. propose new grammar sch. for girls in Dukinfield-Stalybridge area. F. M. Parkes, F.R.I.B.A., Cty. A.

Chester.—District Blind Welfare Society propose new workshops, offices, recreation facilities and canteen at Sealand-rd. Trading estate.

Chesterfield. — T.C. approved plans for nine-storey extension to Tech. College, for Derbys C.C. Plans by F. Hamer Crossley, F.R.I.B.A., Cty. A.

Cockermouth.—U.D.C. to erect flats on old workhouse site. Surveyor, M. M. Dixon.

Consett.—Durham C.C. to convert part of isolation hospital at Villa Real as occupation centre, to plans by Cty. A., Court-la., Durham.

Cumberland.—M. of E. has confirmed a C.P.O. issued by C.C. for land at Workington required for sec. grammar sch.

Durham.—County E.C. is to erect a temporary prim. sch. at Stainton Camp, Barnard Castle, to plans by Cty. A., Court-la., Durham.

Gateshead.—T.C. to erect 107 houses at Leam Head, and children's homes at Causeway estate, Cedars estate and Wrekenton estate. Chief Architect is H. J. Cook, Municipal-bldgs., Swinburne-st., Gateshead.

Gateshead.—Arthur and Kirkup, 13, Swinburne-st., Gateshead, are architects for proposed additions to factory at Team Valley estate.—Office block and gantry store to be erected at Team Valley estate, for Huwoods, Ltd. Architects, Jack Cotton, Ballard & Blow, Norham-rd., North Shields.

Lancs.—C.C. seeks loan sanctions for following hostels for aged: Hindley, £36,915; Nelson, £35,975; Middleton, £35,960; adaptations and improvements at Atherleigh Grange, Leigh, £14,940; adaptations and improvements at 74, Wigan-rd., Ormskirk, £10,715. C.C. to erect 376 houses at Worsley, G. Noel Hill, F.R.I.B.A., Cty. A. Ed. Com. propose alterations to sec. schs. at Clayton-le-Moors, Great Harwood and Rishton.

Lleyn.—R.D.C. to erect houses for aged at Llanbedrog.

Lydiate (Lancs).—Universal Steel Drum Co., Ltd., propose erection of houses fronting Southport-rd.

Macclesfield.—T.C. to erect community hall at Ivy-rd. estate, for old folk. Plans by Boro' A., E. A. Heppenstall, A.R.I.B.A.

Matlock.—Extensions proposed at Convent High School, Chesterfield-rd.

Newcastle-on-Tyne.—Ed. Com. has handed over to C. A. Parsons & Co., Ltd., engineers, Heaton, Newcastle, a site of seven acres for works extensions.

Newcastle-on-Tyne.—Ed. Com. to build prim. sch. at Broadway-rd. City A., G. Kenyon, 18, Cloth Market, Newcastle-on-Tyne.

Newcastle-on-Tyne.—C. H. Errington, L.R.I.B.A., 46, Grainger-st., Newcastle-on-Tyne, has been appointed architect for Denton-sq. Prim. Sch. and Browne, Son & Harding, Pearl-bldgs., Northumberland-st., Newcastle, architects for Stocksfield-ave. Prim. Sch.—Land at Cochrane Park area is being sought by E.C. for new sch.

Newcastle-under-Lyme.—B.C. propose to erect large central highways depot; approved conversion of Erskin Lodge, Clayton-rd., as children's home, for Staffs C.C.; approved plans of shop premises at Thistleberry-ave., for Silverdale Equitable Industrial Co-operative Society, Ltd.; office extensions at West Brampton, for R. H. Booth & Sons; layout for block of maisonettes at Stafford-ave. and 18 houses at Talke-rd. M.O.W. seek site for erection of telephone exchange at Lower-st.

North Riding.—Ed. Com. to proceed with scheme for converting Brompton Hall, near Scarborough, into a special school. Plans by Cty. A., Cty. Hall, Northallerton.

Nottingham.—No. 2 Hospital Management Com. propose extensions to maternity dept. at City Hospital.

Oldham.—B.C. approved plans for office, showrooms and greasing bay at Priory-st., for General Motor Co. (Oldham), Ltd.; 15 houses at Merton-ave., for A. Pellowe & Sons, Ltd.; extensions to "Glenthorne" nurses' home, Queens-rd.; canteen at Hargreaves Works, Coldhurst-st., for Wm. Bodden & Son, Ltd.; extensions to factory at Rochdale-rd., for Emmanuel Whittaker, Ltd.; extensions loading bay at Atkinson-st., for Merideth & Drew; canteen and cloakroom extensions at Atlas Works, Atlas-st., for Dronsfield Bros., Ltd.

Richmond (Yorks).—T.C. to erect eight flats at rear of 41, Bargate.

Runcorn.—U.D.C. approved plans for milk storage depot at "Broadway," off Victoria-rd., for P. L. Rigby & Sons, Ltd., Grappenhall, Warrington. —Sodium peroxide and sodium perborate plant at Castner-Keller Works.

Sedgley.—U.D.C. approved sketch plans for 16 houses at Gibbons Hill and layout for 54 at Turners Hill.

Settle.—R.D.C. approved plans for fire stn. at Bentham, for West Riding C.C.

Skelmersdale.—U.D.C. to erect 16 houses and four bungalows. Plans by J. L. Mather, surveyor.

South Shields. — Town Improvements Com. approved plans for Christian Scientist Church at Hepscott-ter.; oron foundry extensions, etc., at Hill-st., for Carmichael Bros.

South Shields.—Town Improvement and Streets Com. have approved plans for extending Nos. 1 and 2 dry docks for Middle Docks & Engineering Co., Ltd.

Standish.—U.D.C. propose to erect eight "Gregory" type flats at Grove-la. site.

Stretford.—B.C. propose erection of blocks of flats at Stretford-rd.; eight flats at Brooks-rd., for Stretford Housing Society, Ltd.—Plans approved for machine shop at Galgate-st., for Ubique Engineering Co.—Howard & Benson, FF.R.I.B.A., 88, Mosley-st., Manchester, are architects for restoration of library, at £12,000.—M.O.H. to consider modified plans for partial restoration of Old Trafford Baths, at £18,500.

Towcester.—R.D.C. propose to erect 86 houses, four shops and 10 garages at Blisworth, and 18 houses at Stoke Bruerne.

Tow Law (Co. Durham).—North-Eastern Housing Association, Metrovick House, Northumberland-rd., Newcastle-on-Tyne, are to erect 12 bungalows at Tow Law.

West Hartlepool.—Boro' A. to prepare layout plans for houses alongside proposed access road running in westerly direction from Catcote-rd. New designs by Boro' A. for houses and flats to be built at Owton Manor estate have been approved by T.C.

West Riding.—C.C. propose adaptation of outbuildings at Dunford-house, Wath-on-Dearne, as ambulance depot, at £5,000. Min. of Ed. approved inclusion of following in 1951-2 programme: Worsborough Dale Sec. Sch., at £75,000; Tadcaster Sec., £100,000; Brierley Grimthorpe Sec. Mod., £100,000 (phase 1); Rothwell Sec., £100,000 (1st instalment). Section "A", phase 1, of large Sec. Sch. at Colne Valley, Cty. A. is Hubert Bennett, F.R.I.B.A., Wakefield.

Whitehaven.—T.C. to proceed with first stage of new civic hall scheme, at £10,000.

Wigan.—T.C. approved plans for sawmill at Porters Wood, for Riding and Anderton, Ltd.

Wolverhampton.—Ed. Com. seeks loan of £66,102 for proposed Rake Gate Cty. Infants' Sch.

Worcs.—Ed. Com. to erect additional classrooms at Waseley Hills Sch., Rubery. H. C. Lomas, F.R.I.B.A., Cty. A.

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§ Denotes *accepted subject to modification.*
¶ Denotes *accepted by H. M. Government Departments.*

Balcombe.—50 houses for Cuckfield R.D.C. A. Hutchings, M.B.E., M.I.Mun.E., Architect, Council Offices, Boltro-rd., Haywards Heath: *Eames & Calverley, Ringmer, Sussex, £62,741.

Barrow-in-Furness.—Erection of R.C. Voluntary secondary school, Rating-la., for C.B. B.E. & S. Town Hall: *Barrow-in-Furness Corporation Building Department, Salthouse-rd., Barrow-in-Furness, £170,000.

Battersea.—Erection of a county primary school at Linda-st., Battersea:

John Mowlem & Co., Ltd., Westminster	£103,870
C. P. Roberts & Co., Ltd., Holborn	100,760
Tersons, Ltd., Finsbury	100,703
J. Garrett & Son, Ltd., Wandsworth	98,733
Prestige & Co., Ltd., Westminster	97,988
W. J. Marston & Son, Ltd., Fulham	97,893
J. Jarvis & Sons, Ltd., Westminster	96,942
Kirk & Kirk, Ltd., Wandsworth	96,830
William Willett, Ltd., Westminster	96,285
Gee, Walker & Slater, Ltd., Westminster	95,497
Sloggetts (Contractors), Ltd., Kensington	94,878
*Whyatt (Builders), Ltd., Wandsworth	93,470

The comparable estimate of the architects in private practice responsible for the work is £94,978.

Battersea.—Repairs after damage by fire, and improvements at Plough-rd. school:—

Bridge Walker, Ltd., Lambeth	£22,334
Leslie & Co., Ltd., Kensington	21,874
W. J. Marston & Son, Ltd., Fulham	20,429
Kirk & Kirk, Ltd., Wandsworth	20,254
Sloggetts (Contractors), Ltd., Kensington	19,655
J. M. Hill & Sons, Ltd., Wembley	19,647
Gorham (Contractors), Ltd., St. Marylebone	19,599
Percy Bilton, Ltd., St. Marylebone	19,563
L. & W. Whitehead, Ltd., Wandsworth	19,497
H. T. Oliver & Sons, Ltd., Wandsworth	19,089
J. Garrett & Son, Ltd., Wandsworth	18,665
Woodcock Bros. (Wimbledon), Ltd., Wimbledon	18,206
*J. A. Tyler & Sons, Ltd., Chelsea	17,200

The comparable estimate of the architect in private practice responsible for the work is £17,600.

Bethnal Green.—15 flats, Chisenhale-rd. No. 1 site, for B.C. Architect, Donald Hamilton, L.R.I.B.A., F.R.I.C.S.:—

William J. Jerram, Ltd., E.6	£29,915
F. Troy & Co., Ltd., S.E.1	29,734
E. J. Soule & Co., Ltd., Romford, Essex	29,007
Barry High, Barnet, Herts	28,698
Geo. Hudson & Co. (Builders), Ltd., E.18	28,067
Halse & Sons, Ltd., S.E.18	28,033
Tersons, Ltd., E.C.1	27,760
James Webb & Son (Builders), Ltd., E.C.1	26,880
*W. W. Rowney & Co., Ltd., S.E.1	26,564

Boldon.—Erection of six houses at Hall-gdns., for U.D.C.: *Cowell & Rawlings, Ltd., Newcastle-rd., Sunderland.

Bucks.—Ed. Com. to erect first phase of new High Wycombe college of further education: *A. Roberts & Co., Ltd., £154,775.

Buxton.—Firemen's houses, for Derby C.C.: *C. E. Gaunt & Son, Chesterfield, £6,100.

Camberwell.—Repairs and adaptations at Mawbey-rd. school:—

A. Roberts & Co., Ltd., Westminster	£29,200
Mansfield & Neil, Ltd., Minories, E.C.3	28,701
S. T. Oliver & Sons, Ltd., Lambeth	28,526
F. Troy & Co., Ltd., Southwark	27,885
Bernard Sunley & Sons, Ltd., Westminster	27,762
Yeomans & Partners, Ltd., St. Marylebone	26,562
J. Garrett & Son, Ltd., Wandsworth	25,997
Thomas Tierney & Co., Ltd., Poplar	25,939
F. R. Hipperson & Son, Ltd., Broad Street-place, E.C.2	25,362
Truett & Steel, Ltd., Thornton Heath	24,689
*J. & C. Bowyer, Ltd., Croydon	23,994

The comparable estimate of the architects in private practice responsible for the work is £25,450.

Camberwell.—Erection of 112 flats and other work on the Champion Hill (No. 2) site, Camberwell:—

Speirs, Ltd., Westminster	£216,612
Thomas & Edge, Ltd., Woolwich	206,370
Richard Costain, Ltd., Westminster	203,070
Sir Lindsay Parkinson & Co., Ltd., Holborn	202,697
F. Troy & Co., Ltd., Southwark	199,943
Taylor Woodrow Construction, Ltd., St. Marylebone	199,024
A. T. Rowley (London), Ltd., Tottenham	198,444
Tersons, Ltd., Finsbury	197,472
The Unit Construction Co., Ltd., Westminster	194,503
Gee, Walker & Slater, Ltd., Westminster	194,400

*M. J. Gleeson (Contractors), Ltd., North Cheam 189,924
The comparable estimate of the appointed architects, Messrs. Guy Morgan & Partners, is £208,324.

Cardiff.—South-Western Division of N.C.B. to erect pithead bath, cycle park and gantry at Tymawr Colliery, Pontypridd: *Amalgamated Building Contractors, Ltd., Bank-chbrs., 1, Wandsworth-rd., S.W.8, £65,509.

Charlton Kings (Glos).—Eight houses at Ewens Farm estate, for U.D.C.: *Wheeler & Mansell, Ltd., Lime-st., Evesham, £11,104.

Clitheroe.—36 houses at Hayhurst-st. and Goosebutts site, for T.C.: *Hawthorne Bros., Ltd., Cleveleys, Blackpool, £44,625.

Croydon.—Improvements in 32 cottages at Shirley residential school, Croydon:—
Truett & Steel, Ltd., Thornton Heath ... £46,770
A. J. Wait & Co., Ltd., Wallington ... 45,719
Demolition & Construction Co., Ltd., Westminster 43,456
Clarke, Barton & Co., Ltd., Sutton 42,676
R. Mansell, Ltd., Croydon 41,321
Wm. Harbrow, Ltd., Begmondsey 38,228
*A. B. Johnson, Ltd., Lewisham 38,198
Chief engineer's comparable estimate is £37,625.

Derby.—10 houses at Newbold area, for T.C.: *Direct Labour.

Doncaster.—New factory at Wheatley Hall-rd., for P. Platts & Son, Ltd.: *T. Jenkinson & Sons (Doncaster), Ltd., Bently-rd., Doncaster.

Durham.—Cty. Ed. Com. to erect technical school at Hebburn, to cost £250,000. Plans by Cty. A., Durham. Steelwork: *The Palmer Hebburn Co., Ltd., Hebburn.

Essex.—Construction of the western portion of the major shopping centre at Bebden, Essex, comprising the superstructure of 28 lock-up shops, accommodation for five multiple stores, 39 flats and maisonettes, 22 garages, public lavatories and other works:—
Charles S. Foster & Sons, Loughton ... £212,820
Hall, Beddall & Co., Ltd., Lambeth ... 207,690
J. Jarvis & Sons, Ltd., Westminster ... 205,721
Allen Fairhead & Sons, Ltd., Enfield ... 204,128
M. J. Gleeson (Contractors), Ltd., North Cheam 203,877
C. P. Roberts & Co., Ltd., Holborn 202,987
Thomas & Edge, Ltd., Woolwich 201,432
Gee, Walker & Slater, Ltd., Westminster 201,324
W. H. Gaze & Sons, Ltd., Westminster ... 199,987
Richard Costain, Ltd., Westminster ... 199,938
Tersons, Ltd., Finsbury 198,932
*W. J. Simms, Sons, & Cooke, Ltd., Westminster 194,987
The comparable estimate of the director of housing and valuer is £200,834

Gateshead.—Factory addition at Teams Glassworks, for George Davidson & Co., Ltd.: *Bewley & Scott, Ltd., Dunston-on-Tyne.

Gateshead.—Extension to fabricating shop at Teams, for the Redheugh Iron & Steel Co., Ltd.: *Direct Labour.

Islington.—War damage repairs and improvements at Yerbury-rd. school:—
Rowley Bros., Ltd., Tottenham £27,979
A. T. Rowley (London), Ltd., Tottenham ... 26,374
Foster and Dicksee, Ltd., St. Marylebone... 26,315
Patman & Fotheringham, Ltd., Islington ... 26,280
Harry Neal, Ltd., St. Marylebone 26,220
Norman Sinclair, Ltd., Ealing 25,666
Yeomans & Partners, Ltd., St. Marylebone 25,307
H. Parfitt & Sons, Ltd., Willesden 25,238
C. P. Roberts & Co., Ltd., Holborn 25,200
*Frank Batty & Smith, Ltd., Paddington ... 23,723
The comparable estimate of the architect in private practice responsible for the work is £23,960.

Lambeth.—Construction of 256 flats and other works on the Stockwell-rd. site, Lambeth:—
George Wimpey & Co., Ltd., Hammersmith £598,283
Griggs & Sons, Ltd., Westminster 594,592
Harry Neal, Ltd., St. Marylebone 590,101
Wm. Nicholson & Son (Leeds), Ltd., E.C.4 587,764
J. Jarvis & Sons, Ltd., Westminster ... 585,321
C. Miskin & Sons, Ltd., St. Albans 577,923
C. F. Kearley, Ltd., Chiswick... 575,885
Wates, Ltd., Norbury 575,421
Thomas & Edge, Ltd., Woolwich 574,840
J. Chapman & Sons, Ltd., Leicester ... 570,150
Gee, Walker & Slater, Ltd., Westminster 569,981
Kent & Sussex (Contractors), Ltd., Westminster 569,933
Richard Costain, Ltd., Westminster ... 566,174
Wilson Lovatt & Sons, Ltd., Westminster... 558,016
*The Unit Construction Co., Ltd., Westminster 549,912
The comparable estimate of the appointed architects, Messrs. Louis de Soissons & Partners, is £592,947.

Lewisham.—War-damage repairs and improvements at Downham county secondary school:—
William Mills & Sons, Ltd., Greenwich ... £40,122
Herbert Richardson & Sons, Ltd., Erith ... 38,716
W. J. Simms, Sons & Cooke, Ltd., St. Marylebone 38,334
Hill & Gurr, Ltd., Bromley 37,853
Thomas & Edge, Ltd., Woolwich 37,683
Stone & Co (London), Ltd., Croydon ... 37,428
Lavender, McMillan, Ltd., Worcester Park 37,246
Sloggetts (Contractors), Ltd., South Kensington 37,237
Halse & Sons, Ltd., Woolwich 36,448
Percy Bilton, Ltd., St. Marylebone 36,392
Arthur J. Tatham, Orpington 36,122
The Demolition & Construction Co., Ltd., Westminster 35,728
Truett & Steel, Ltd., Thornton Heath ... 35,572
Campbell & McGill, Ltd., Chislehurst ... 35,174
*Kent & Sussex Contractors, Ltd., Sidcup ... 34,432
The comparable estimate of the architect in private practice responsible for the works is £37,638.

Lewisham.—Erection of 40 flats, a laundry and clubroom building, and other works at Heathside estate extension, Lewisham:—
F. & H. F. Higgs, Ltd., Lambeth £106,425
C. F. Kearley, Ltd., Chiswick 105,920
E. A. Roome & Co., Ltd., Hackney 105,610
Geo. Parker & Sons, Ltd., Camberwell ... 105,562
The Demolition & Construction Co., Ltd., Westminster 105,380
A. T. Rowley (London), Ltd., Tottenham 104,968
J. Jarvis & Sons, Ltd., Westminster ... 104,327
C. Miskin & Sons, Ltd., St. Albans 104,169
Tersons, Ltd., Finsbury 102,421
Thomas & Edge, Ltd., Woolwich 102,384
Kent & Sussex Contractors, Ltd., Westminster 101,364
*Thos. Bates & Son, Ltd., Romford 101,100
The comparable estimate of the appointed architects, Messrs. Edward Armstrong & Frederick MacManus, is £96,550.

¶London (Admiralty).—Particulars of contracts placed by Civil Engineer-in-Chief's Dept., Admiralty:—
West Leigh, Hants: Plate shop, smithery, etc., John Lay & Co. (Portsmouth), Ltd., 205-7, Arundel-st., Portsmouth.

¶London (Air Ministry).—Contracts to the value of £500 or over for week ended January 27:—
Resurfacing work: General Asphalte Co., Ltd., London, S.W.1. *Painting work*: Arnold Sharrocks, Ltd., London, S.W.11. *Building work*: Ellis Thompson & Co., Ltd., Louth, Lincs; Globe Contractors, Ltd., Watford. *Concreting to aprons*: G. & J. Sedden, Little Hulton, nr. Bolton. *Levelling of rough areas*: En Tout Cas Co., Ltd., Syston, Leicester.

London (City).—Ed. Com. to reconstruct Harcourt-bldgs., Inner Temple: *Higgs & Hill, Ltd., South Lambeth-rd., S.W.8. £100,000.

¶London (M.O.W.).—Contracts placed by M.O.W. during week ended January 27:—
London: Parcels Block, Mount Pleasant Sorting Office, E.C., Internal and external painting and cleaning, Decorative Art Guild, Ltd., 43, Lower Belgrave-st., Eaton-sq., S.W.1; New Branch P.O. Sorting Office, Kensington, Alterations to buildings, Haymills (Contractors), Ltd., Hangar Green, Western-av., W.5. *Devonshire*: Plymouth Telephone Exchange and Garage, Internal decorations, E. J. Salter & Son, 5, Fore-st., Liskard; Plymouth S.S.O., Internal decorations, T. H. Kenyon & Sons, Ltd., Chancellors Works, Croxley-rd., London, W.9.
Fifeshire: Hawklaw Radio Station, Cupar, Erection of training and administrative building, R. Durie, Jun., Cupar-rd., Tayport.
Lanarkshire.—Kirk o'Shotts, Erection of television relay station, W. & J. R. Watson, Ltd., 81, Gt. King-st., Edinburgh. *Lancashire*: Civil Service Canteen, 13, Quay-st., Manchester, Adaptations, W. Fearnley & Sons (Salford), Ltd., Eccles New-rd., Salford. *Wiltshire*: Rollestone-st., Salisbury, Alterations and additions to employment exchange, Edward Linzey & Son, New Bridge-rd., Salisbury.

¶London (War Dept.).—Works contracts placed by War Dept. during week ended January 27:—
Cambs: Miscellaneous, J. H. Cross & Son, Littleport, Cambs. *Kent*: Roadwork, W. H. Bensted & Son (Contractors), Ltd., Maidstone. *Sussex*: Building, The Drake Construction Co., Ltd., Rustington, Sussex. *Northumberland*: Miscellaneous, T. Norris, North Shields; Tate & Holmes, Ltd., Newcastle-on-Tyne. *Cumberland*: Painting, Reid Bros., Carlisle. *Notts*: Roadwork, W. J. Glossop, Ltd., York.
Westmorland: Miscellaneous, W. E. Sayer, Kirkby Stephen. *Merionethshire*: Miscellaneous, Geo. Linnecor & Son, Ltd., Birmingham 6. *Pembs*: Building, Geo. Argent & Co., Pembroke. *Salop*: Relining building, Ernest M. Minshall, Ltd., Market Drayton; Building, M. A. Boswell (Contractors), Ltd., Wolverhampton. *Worcestershire*: Painting, Arthur Hogg, Ltd., Manchester.
Glos: Roadwork, Western Asphalte & Tar Paving Co., Ltd., Bristol. *Hants*: Painting, J. T. Parsons & Son, Ltd., Salisbury. *Berks*: Miscellaneous, Geo. Linnecor & Son, Ltd., Birmingham. *Oxon*: Miscellaneous, E. J. Logan (Putney), Ltd., London, S.W.15. *Berks*: Painting, Maurice Hill Construction Co., Ltd., London, E.C.3. *Wilts*: Painting, Arundel (Contractors), Ltd., Bradford; Building, Horn Construction Co., Ltd., London, E.C.2.

Middlesbrough.—Erection of Thorntree No. 2 C.P. school, The Greenway, for C.B. Architect is P. R. Middleton, A.R.I.B.A. Quantities by Turner & Ing, Darlington: *Leslie & Co., Ltd., Darlington, 2, Woodland-rd., Darlington, £114,712.

Milnrow.—50 flats at Firgrove estate, for U.D.C.: *J. Gerrard & Sons, Swinton, nr. Manchester.

Newcastle-on-Tyne.—Extensions to Newgate-st. branch of Jackson's, Tailors, Newcastle-upon-Tyne. Architects are Stephenson & Gillis, 2, Saville-chbrs., North-st., Newcastle: *F. J. Hepple, Dunn-st., Newcastle.

Newcastle-on-Tyne.—Alterations to factory at Sandyford-rd. in connection with the installation of new plant, for Robert Deuchar, Ltd.: *G. Browell, Ltd., Blaydon-on-Tyne.

Northampton.—E.C. to erect infants' school at King's Heath: *W. J. Richardson & Son, Northampton, £33,578.

Oldham.—Stage one of new College of Further Education at Rochdale-rd., for E.C.: *Wm. Townson & Sons, Ltd., Park Hill-st., Bolton, £273,820; adaptations at Wellington Lodge: *J. & J. Blunn, Ltd., £4,757; adaptations to nursery block at Firbank: *Armitage Units, Ltd., £12,466.

Poplar.—Erection of a cty. prim. sch. at St. Leonard's-rd.:—
Prestige & Co., Ltd., Westminster £101,881
A. T. Rowley (London), Ltd., Tottenham 101,801
Stewart & Partners, Ltd., St. Marylebone 100,974
F. R. Hipperson & Son, Ltd., E.C.2 ... 98,451
J. Garrett & Son, Ltd., Wandsworth ... 98,436
C. F. Kearley, Ltd., Chiswick 96,269
John Laing & Son, Ltd., Mill Hill ... 96,182
Lavender, McMillan, Ltd., Worcester Park 96,134
*Tersons, Ltd., Finsbury 93,351
Architect's comparable estimate is £96,002.

St. Pancras.—Erection of 76 flats at Torrianoave., for B.C.:—
Trollope & Colls, Ltd £42,334
Dove Brothers, Ltd. 41,614
F. G. Minter, Ltd. 41,186
C. Miskin & Sons, Ltd. 41,056
Thomas & Edge, Ltd. 40,967
Tersons, Ltd. 40,860
Leslie & Co., Ltd. 40,555
A. T. Rowley (London), Ltd. 39,941
*William Willet, Ltd. 39,563

Sedgley.—U.D.C. to erect 30 houses at Boundary-hill and Ellowes-rd.: *Tomlinson Bros., Wolverhampton-rd., Sedgley, £38,445; 16 at Hickmerelands-land: *W. Whittingham, Ltd., Powlett-st., Wolverhampton, £21,449.

Sheffield.—Drill hall at Intake for West Riding Territorial and Auxiliary Forces Association: *M. J. Gleeson, Ltd., Chesterfield-rd., Sheffield.

Shoreditch.—Erection of 25 flats and other works at Haggerston estate (Benfleet-pl. area), Shoreditch:—
Woodcock Bros. (Wimbledon), Ltd., Wimbledon £48,190
Marshall Andrew & Co., Ltd., Westminster... 46,102
Henry Kent (Builders), Ltd., Lewisham ... 45,392
Sloggetts (Contractors), Ltd., Kensington 43,991
W. H. Gaze & Sons, Ltd., Kingston-on-Thames 43,963
Thomas Tierney & Co., Ltd., Poplar ... 43,377
Unit Construction Co., Ltd., Westminster... 43,137
H. T. Oliver & Sons, Ltd., Lambeth ... 42,645
W. J. Marston & Son, Ltd., Fulham ... 42,580
*Rowley Bros., Ltd., Tottenham 41,676
The comparable estimate of the director of housing and valuer is £40,995.

Skelmersdale.—Eight bungalows at Windrows Farm site, for U.D.C.: *James Gee, 43, Worsley-st., Pemberton, £7,122.

Smethwick.—22 dwellings at Abbey-rd. and Pargeter-rd., for B.C.:—*Lee Bros., Ltd., 35, Wittonla., Hill Top, Wednesbury, £32,240.

Southampton.—C.B. to erect temporary factory at Cable-st., Northam. Plans by Boro' Architect's Dept.:—
J. Bates & Son £3,844
E. H. Burgess, Ltd. 3,721
A. E. Jukes & Son, Ltd. 3,658
The South Hants Bldg. Co., Ltd 3,577
J. J. Udalls Bldg. Co., Ltd. 3,522
Thompson & Spurr 3,514
Rice & Son, Ltd. 3,466
John Lewis (Bldg.), Ltd. 3,300
Mullen & Lumsden, Ltd. 3,211
*W. C. & B. Lintott 3,077

Southampton.—Rebuilding of Regent's Park Infants' School. Brian L. Sutcliffe & Partners.

F.R.I.B.A., 5, Manchester-sq., W.1. Quantities by Denley & McPherson:—
C. F. Hemming & Co. £11,886

Thompson & Spurr 11,678
E. H. Burgess, Ltd.... 11,433
G. P. Cooper 11,304
W. T. Nicholls (Southern), Ltd. 11,273
Rice & Son, Ltd. 10,852
J. J. Udalls Building Co., Ltd. 10,834
G. Manners, Ltd. 10,830
A. E. Jukes & Son 10,660
John Lewis Building, Ltd. 10,450
Davies Evans (Contractors), Ltd. 10,300
*W. C. & B. Lintott, Ltd. 10,081

South Shields.—Iron foundry additions, Hill-st., for Carmichael Bros.: *Richardson & Greenwell, St. Nicholas'-bldgs., Newcastle-on-Tyne.

Stepney-Poplar.—Erection of nine flats, 12 maisonettes and other work (contract A), and the main fabric of a public-house with licensee's flat above and other work (contract B) on housing site No. 5 in Lansbury, Stepney-Poplar reconstruction area:—
Marshall Andrew & Co., Ltd., Westminster £47,460
Allen Fairhead & Sons, Ltd., Enfield ... 47,242
Harry Neal, Ltd., St. Marylebone 46,415
Griggs & Son, Ltd., Westminster 45,996
E. A. Roome & Co., Ltd., Hackney 45,615
Gorham (Contractors), Ltd., St. Marylebone 43,206
Y. J. Lovell & Sons, Ltd., Paddington ... 42,858
Tersons, Ltd., Finsbury 41,408
J. M. Hill & Sons, Ltd., Wembley 40,292
Charles S. Foster & Sons, Loughton ... 40,219
*C. Miskin & Sons, Ltd., St. Albans ... 39,377

Comparable estimate of the appointed architects, Messrs. Norman & Dawbarn, is £40,465.

Stockton-on-Tees.—Erection of 3,000,000 cu. ft. gasholder, to cost £100,000, for the Northern Gas Brd.: *Ashmore, Benson, Pease & Co., Ltd., Stockton-on-Tees.

Sunderland.—Factory of P. Bergsman & Co., Atlas Works, Sunderland, to be rebuilt. Architects are Stephenson & Gillis, 2, Saville-chbrs., North-st., Newcastle: *F. J. Hepple, Dunn-st., Newcastle.

Wallasey.—Erection of Park county infants' school, for Ed. Com.: *A. Hopley (Little Sutton), Ltd., Station-rd., Little Sutton, £54,245 (subject to M.O.H. approval).

Wallsend.—120 houses for T.C.: *J. T. James, Archer-st., Wallsend.

Wandsworth.—Construction of 116 flats, six maisonettes, and eight houses on the Aldrington-rd. site, Wandsworth:—
F. & H. F. Higgs, Ltd., Lambeth £275,654
Trollope & Colls, Ltd., Holborn 275,125
The Demolition & Construction Co., Ltd., Westminster 258,135
J. Jarvis & Sons, Ltd., Westminster ... 257,625
The Unit Construction Co., Ltd., Westminster 254,711
Percy Bilton, Ltd., Westminster 251,986
Stewart & Partners, Ltd., St. Marylebone 251,666
C. F. Kearley, Ltd., Chiswick 250,610
Leslie & Co., Ltd., Kensington 249,838
*Kent & Sussex (Contractors), Ltd., Sidcup 247,398

The comparable estimate of the appointed architects, Messrs. Riches & Blythin, is £253,250.

Wem.—18 houses at The Grove site, for U.D.C.: *J. H. Grindall & Son, High-st., Wem, £24,811 (revised tender).

West Hartlepool.—Erection of junior and infant assembly halls at the Golden Flatts county primary school, for Ed. Com. Plans by Boro' A.: *Leslie & Co., Woodlands-rd., Darlington.

West Hartlepool.—Reconstruction of Eldon-gr. with concrete foundations and bituminous surface, for T.C. J. Stanley Miles, Boro' E.: *Direct Labour, £5,000.

Wigan.—12 bungalows at Moor-rd. estate, for T.C.: *G. Halliwell, Ltd., £9,393.

Winchester City.—48 houses, Weeke housing estate. P. H. Warwick, L.R.I.B.A., M.I.Mun.E., M.T.P.I., Winchester. Quantities by A. S. Wilson & Partners, 8, Princes-st., S.W.1: *C.P.C. Builders & Constructional Engineers, Gates Mill, West End, Southampton, £57,424.

Wolverhampton.—Second instalment of Northicote secondary school, for Ed. Com.: *A. M. Griffiths & Son, Ltd., Thomas-st., Wolverhampton, £58,847; 94 houses at Moreton estate: *N. Hyde, 6, Claremont-rd., Sedgley, £90,553.

Worcs.—Erection of primary school at Lickey, for C.C.: *Wm. Weaver, Ltd., Bromsgrove, £54,732.

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